SP3D Object Search User's Manual

Rev.4

(Corresponding to Version 0.603)

SP3D Object Search was developed to achieve conventional search of model object and create Excel report. It also provides import function from the Excel report.

0. System Requirement

Intergraph SmartPlant 3D 2009SP1 or higher.

Database MSSQL and Oracle both supported.

Microsoft Excel 2003 or higher.

1. Installation

Copy "SP3DOBJSearch.ocx" (for version 2009.1) or SP3DOBJSearch2009 (for version 2009SP1), "SP3DDwgLink.dll", "SP3DIsoLink.dll", "DwgCustom.dll" and "UserShapeDef.mdb" to your local folder, same location.

Function of each file is:

SP3DOBJSearch.ocx: Main SP3D custom command

DwgCustom.dll: Additional DLL required to update drawing properties

SP3DIsoLink.dll: 2D Editor's macro called from SP3DOBJSearch.ocx

SP3DDwgLink.dll: 2D Editor's macro called from SP3DOBJSearch.ocx

UserShapeDef.mdb: Definition file for shape placer

To use main search/export/import function, only SP3DOBJSearch.ocx is required.

Run regsvr32 to register program. From Start button-Run, type regsvr32 and space, then drag SP3DOBJSearch.ocx to "Run" form. Then click OK. Then complete message will be appeared as Fig.2. Repeat registration for DwgCustom.dll.

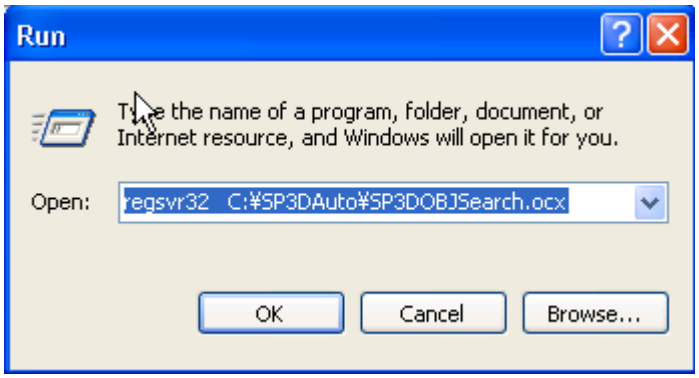


Fig.1 register from Run

Once you registered, every time newer version released, update is just replace existing ocx file.

Fig.2 registration succeeded

2. Run custom command

This command can be run in two different ways. One is normal command and another is command assistant. The difference of normal command and command assistant is:

1) Normal command will be stopped or suspended by other command depending on its priority. On the other hand, command assistant will continue to run. (Switching task will quit command assistant.)
2) Command assistant can not modify data. Several function related to data import will be disabled.

This command needs at least one active view. Run "Tools"-"Custom commands" from any task (except catalog, drawing & report, systems & specifications which has no active view), then click "Add" button. Type "SP3DOBJSearch.Search_Object" (in case of normal command) or "SP3DOBJSearch.RunAsAssistant" (in case of command assistant) in Command Progid and set any command name (ex. SP3D Object Search)

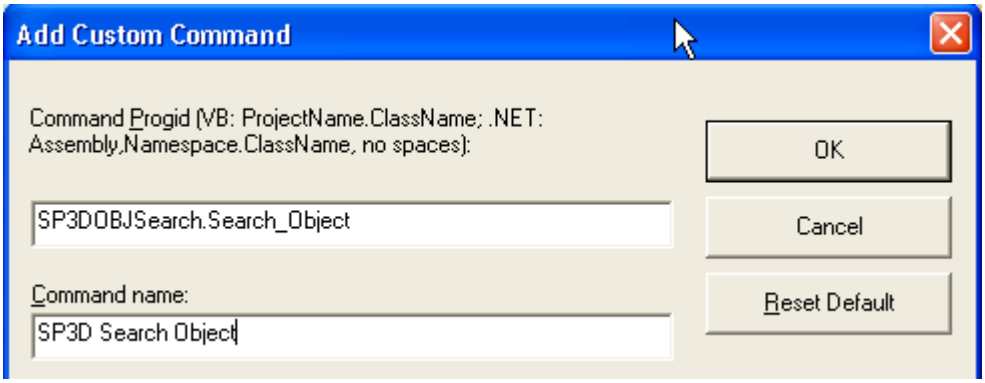
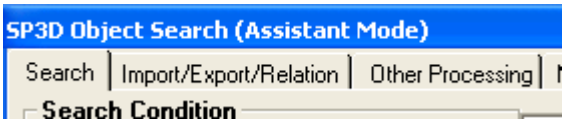


Fig.3 add new custom command

Then click OK. Select custom command and click "Run". Main form will be shown as Fig.4.

In case of command assistant, caption of main search form will be like;



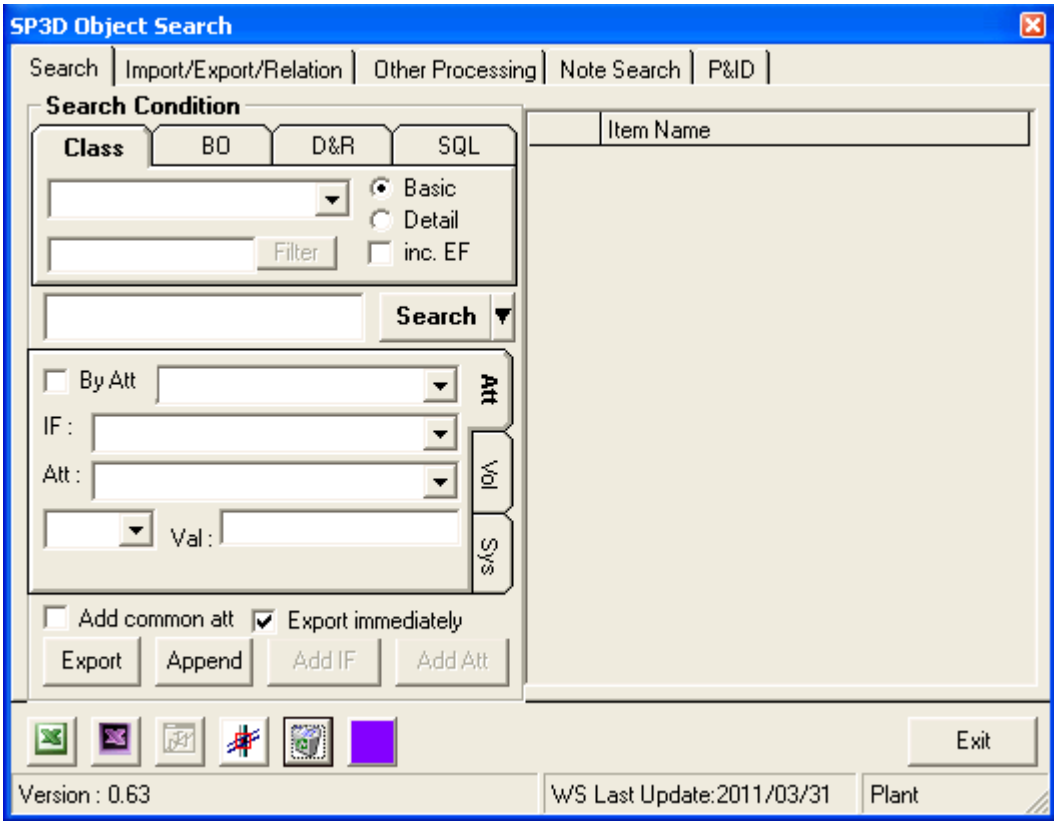


Fig.4 main form

Run command by short cut key

Right-click "Search" tab, then run "Add to Edit Menu" (See Fig.5). Two "Find" command will be added in "Edit" menu. (This change will be reflected after switching task.) You can call the custom command from simple short cut key Ctrl + F (normal command) or Shift + F (command assistant). F stands for "FIND" for many other applications.

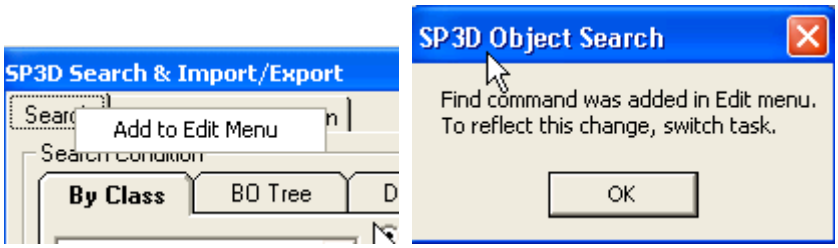


Fig.5 menu registration

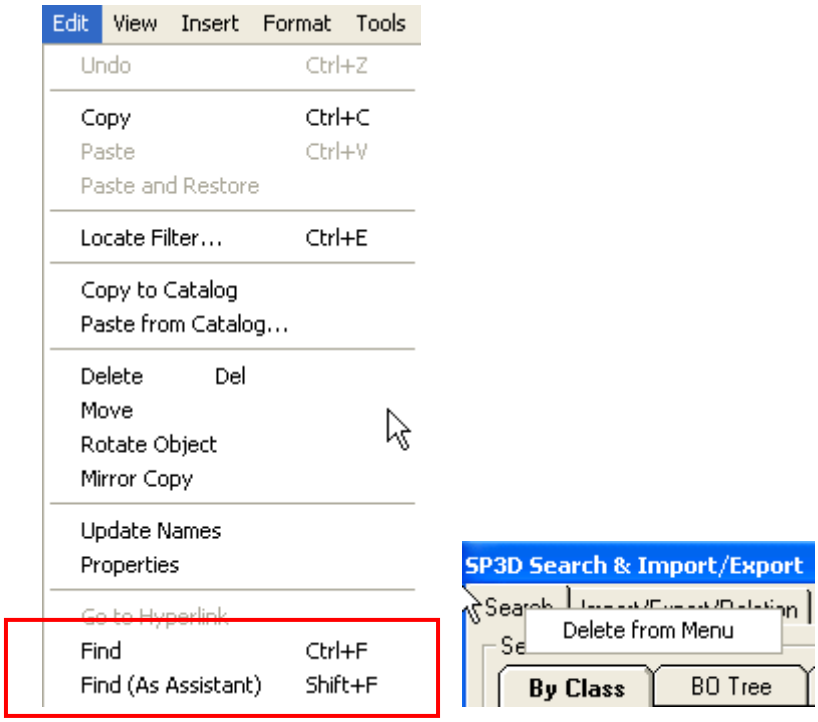


Fig.6 modified edit menu/Delete menu

You can unregister from “Edit” menu by run “Delete from Menu” by right-click of Search tab once again.

3. Search Type

3.1. Search by class name

First of all, you have to choose object type (=class). As SP3D has many kinds of classes, it’s hard to select from all classes, Therefore following 5 classes are registered as basic class.

Equipment / Pipe Run / Pipe Line / Instrument / Specialty

(These class objects have unique item tag and displayed in P&ID for most of cases.)

If you want select other classes, change option from “Basic” to “Detail” then class combo box displays all type of classes which has Item Name (in other words of system which has interface IJNamedItem). However it’s very difficult to find target class from the combo box. You can filter combo box entry by input part of class name in the text box next to the “Filter” button then click the button. If you want to avoid such step from next time, you can additionally register your favorite class to “Basic”. Select target class and right-click “Detail” option label and run “Add to Basic” menu (Fig.7).You can reset to basic 5 classes by right-click “Basic” option and run “Initialize Basic Class”.

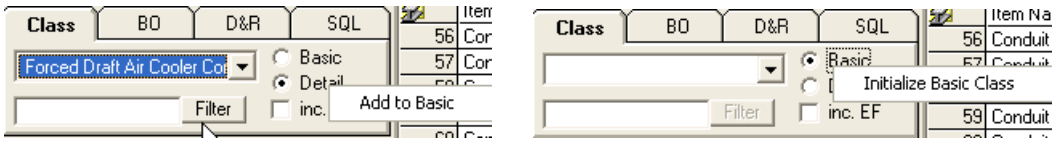
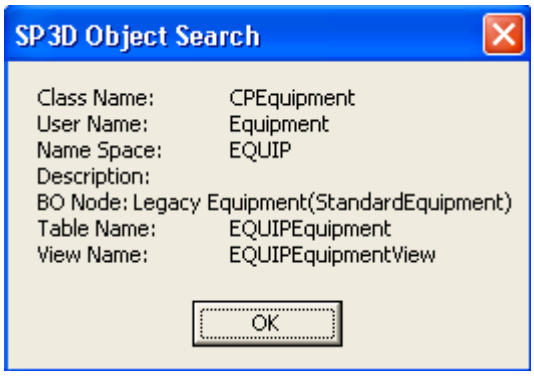


Fig.7 add to basic/initialize basic class

Check box of "inc. EF" will include Engineering Framework object. Most of users may not have chance to check this option.

If you key-in V on class combo box, detail information of class will be displayed as following and same information will be copied to clip board.



3.2 Search from Business Object Tree

If you are not familiar with class names, you can select target class from business object tree which is same as object type tab in filter definition. Simply click "BO Tree" button to display tree and select target object.(multi-selection is not allowed.)

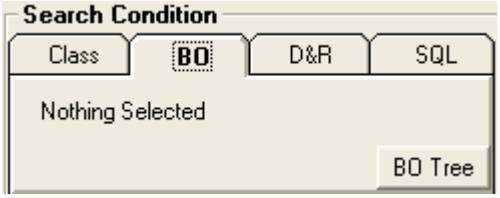


Fig.8 BO Tree tab

Select one target business object class and then click "Select" button.

BO class displayed with italic font (See Fig.9 *Cable Features*) is not selectable because its class does not have item name property.

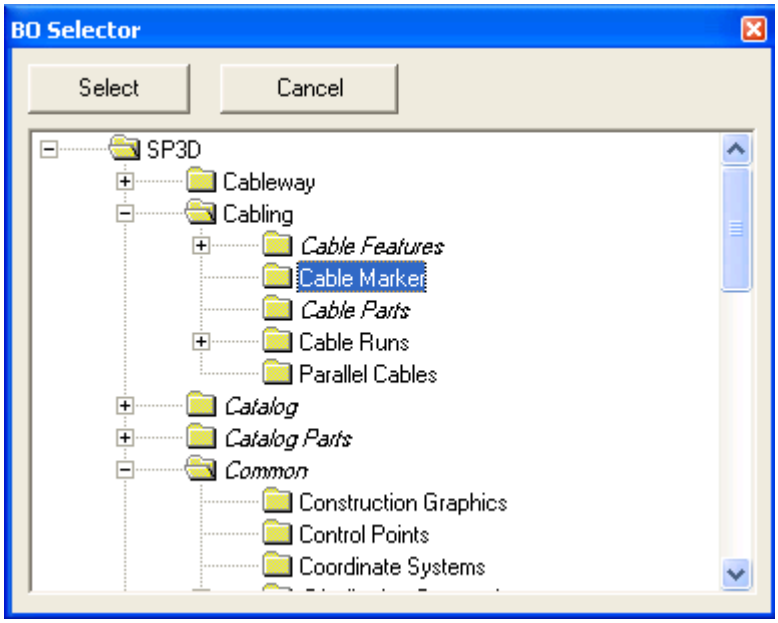


Fig.9 BO Tree select

3.3 Search from Drawing & report Tree

If you want to search drawings/ reports, select “D&R” tab and select type of object and select snap-in folder by clicking “D&R Tree” button if required.

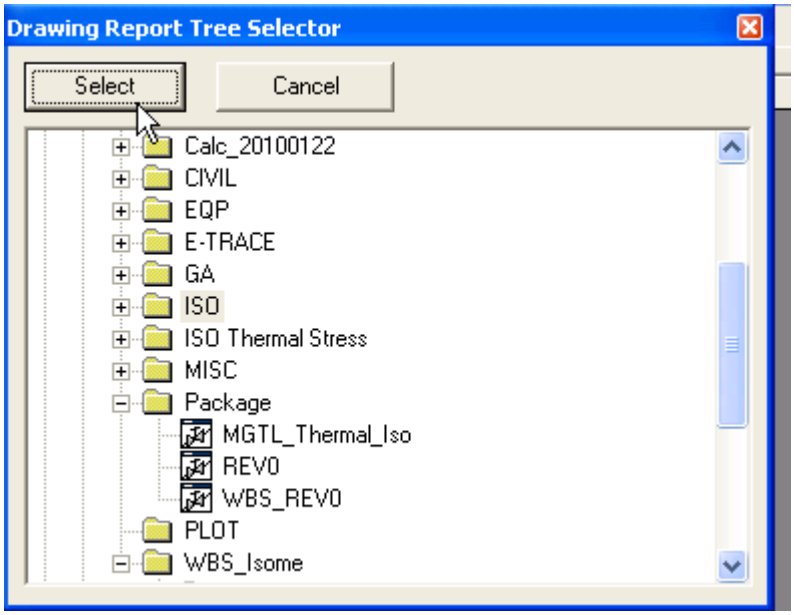


Fig.10 drawing / report tree select

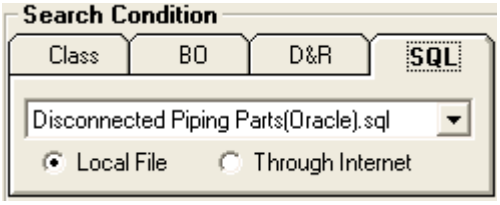
Then you can specify type of object (Iso, Ortho etc.) and status as option.

For “Display Obj List” check box, see Sec 14.

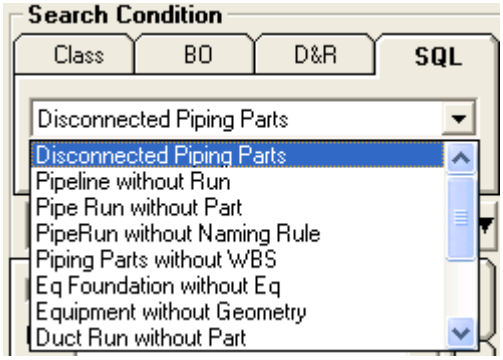
3.4 Search by SQL

If you prepare SQL text file (.sql) in the folder where SP3D Object Search exists, select one of .sql files in the combo box.

SQL must have oid as first column and item name as second column which will be displayed as search result.



If Internet access to dropbox.com is allowed, switch option to "Through Internet" to access common SQL library and select one of them.



In case of SQL search, following search option will not be applied except search scope option.

3.5 Execute Search

Type (part of) name if necessary in text box and click "Search" button, object name list will be displayed in the right grid. Number of record will be displayed in the left section of status bar.

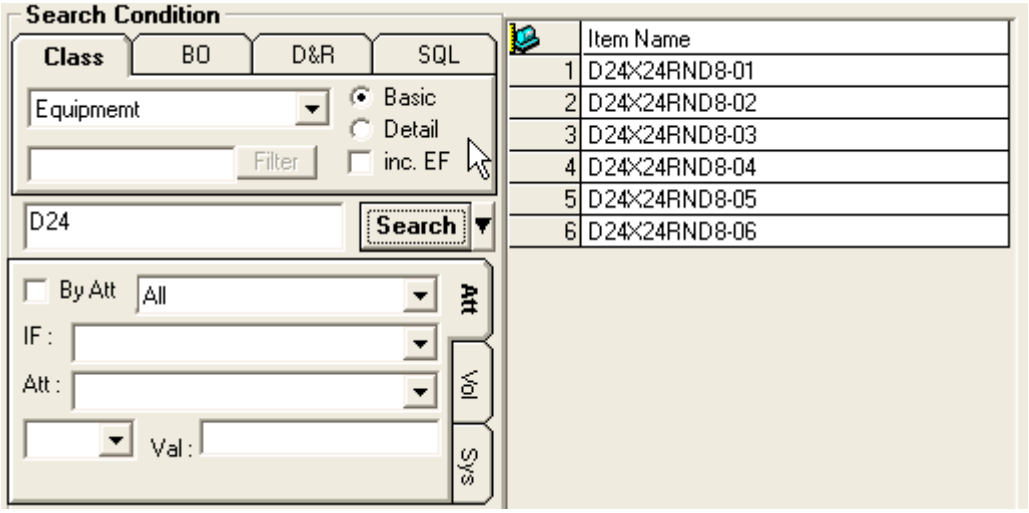
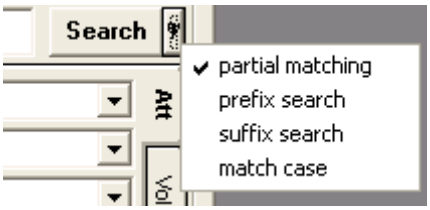


Fig.11 search result

Name search option

By default partial matching is on. You can change to prefix or suffix search by clicking triangle mark next to the Search button. Also you can set match case option. (This option is valid only when the database server is Microsoft SQL server.)



4. Search scope option

By default, search scope is whole plant. You can change search scope by clicking right of the status bar. Search scope is changed as followings by single click

Plant -> Workspace -> Select Set

When you switch scope from Workspace to select set, program will ask you to run select by filter or not.

This scope option will be ignored when you select class from D&R Tree.

If you search with whole plant scope, item which is not in current workspace will be displayed with gray color.

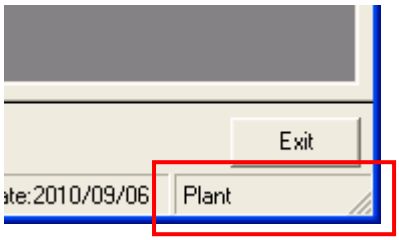
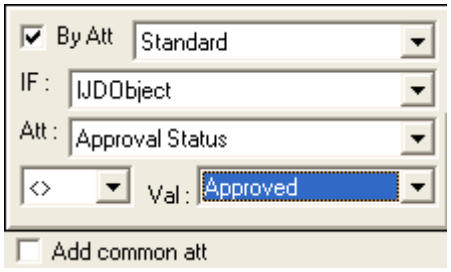


Fig.12 search scope option (click to switch)

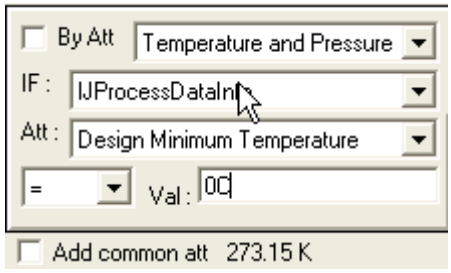
5. Search by attribute option

If you want to search object with specific attribute, check “Search By Att” option and select Interface /Attribute and attribute value condition. If user is not familiar with interface name, select category from combo box to restrict interface entry. If attribute type is code list type, text box will be replaced with combo box with code list. If type of attribute is number with unit of measure, number with unit will be converted to default unit value automatically. If attribute type is date, calendar control will be appeared.

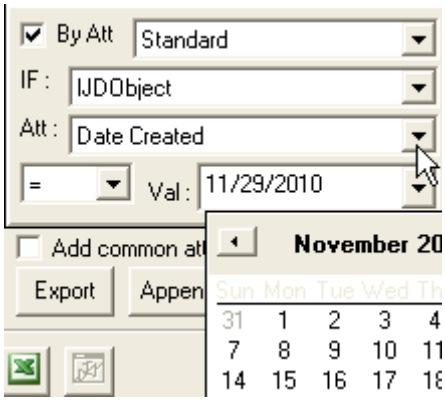
Here is several sample of search condition.



Approved status is not “Approved”



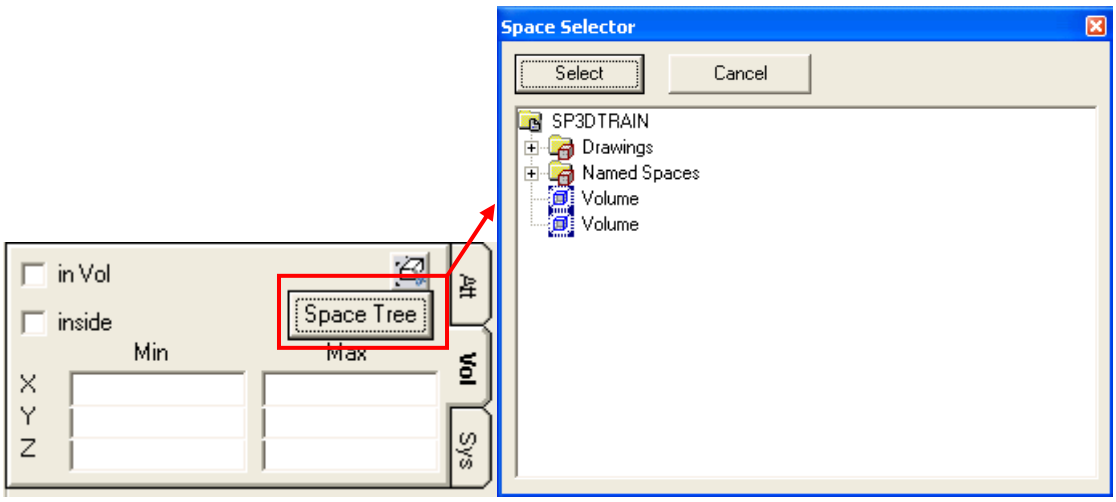
Minimum design temperature smaller than 0C



Search by created date

The attribute search option will be ignored when you select class from D&R Tree.

6. Search by volume option



You can additionally define volume as search scope by checking "in Vol." option. If volume is pre-defined in model data as drawing volume, zone or area, you can select one of them from space tree by clicking "Space Tree" button. X/Y/Z min/max will be automatically set in the text boxes. Clicking volume icon will fit the volume to active view.

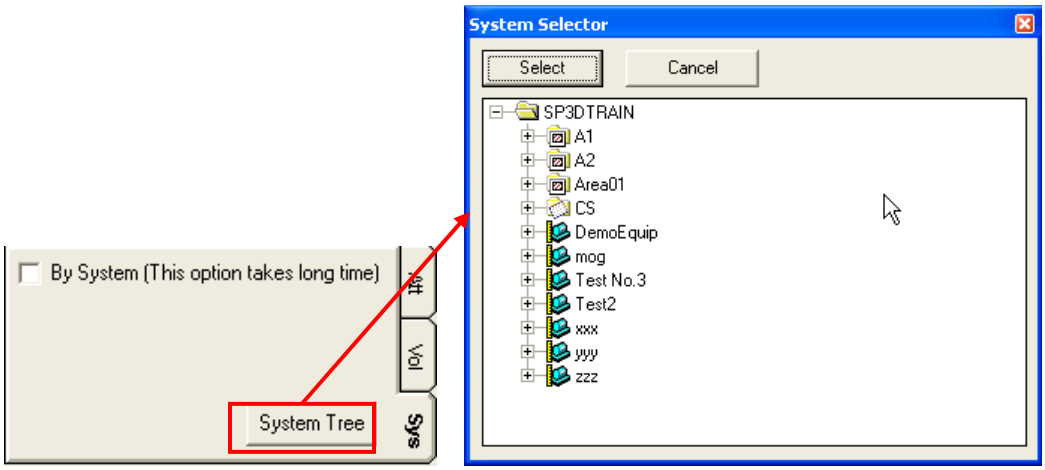
You can specify volume range manually instead of selecting pre-defined volume.

By default, (inside option check off), object which part of the range is in the specified volume will be searched. By checking inside, object which the whole range is in the volume will be searched. The volume search option will be ignored when you select class from D&R Tree.

7. Search by system option

Check "By System" option and click "System Tree" button to select target system folder from tree. Click "Select" to go back to main form with selection.

Object will be searched under the system folder. (With this option search response may be slower if the model data is huge.)



Search result grid operation

After search result is displayed in the grid, several operations can be called from grid.

a) Single click - Simply select object in the workspace and active view.

b) Double click – Fit in the all views (In case of Isometric sheet, corresponding model object will be fit. In case of pipe line, containing pipe runs will be fit)

c) Right click – Property display will be shown. After closing property form, main form will come back. If object type is drawing, open drawing with Smart Sketch editor. In case of report, Excel report will be opened.

d) "Ctrl+Delete" key – Delete object after confirmation message.

e) "Insert" key – if the object is out of scope of workspace, it will be added to current workspace. (multi-select possible)

f) Ctrl+A – selected object will be sent to relation analyzer. (See section 8.2)

g) Ctrl+H – Hide

h) Ctrl+S – Show

i) Ctrl+C – Copy selected item list in the clipboard. (Then paste on blank Excel sheet)

j) Shift+A – Set color to each cell in the name column of the grid based on your access right. Meaning of color is;

Dark yellow: read only by permission settings

Magenta: read only by approval status

White: full access (updatable)

Gray: Other status

8. Excel list export / defining index

Search result will be exported to new Excel workbook. Sheet name will be SP3D <class name> List. First 'A' column is oid and is hidden. Oid is database unique identifier which is required to export/import etc. in following section. Don't delete the column. Second B column is item name. If you run "Export" with "Add common att" checked, all

basic attribute indexes will be added from C column. You can customize (change order, delete unnecessary attribute etc.) First row is interface name and second row is attribute name and third row is user attribute name which is same as property display by default.

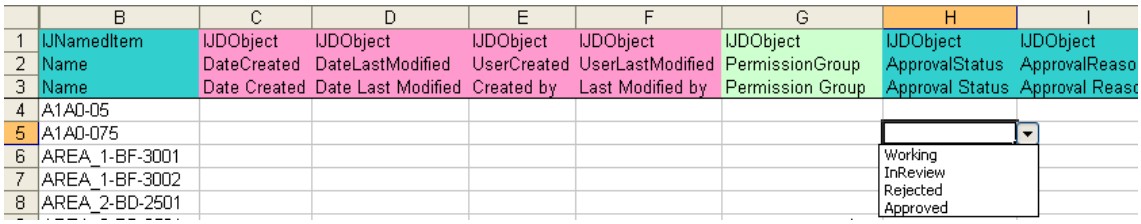

B C D E F G H I
1 IJNamedItem IJDObject IJDObject IJDObject IJDObject IJDObject IJDObject IJDObject
2 Name DateCreated DateLastModified UserCreated UserLastModified PermissionGroup ApprovalStatus ApprovalReaso
3 Name Date Created Date Last Modified Created by Last Modified by Permission Group Approval Status Approval Reas
4 A1A0-05
5 A1A0-075
6 AREA_1-BF-3001
7 AREA_1-BF-3002
8 AREA_2-BD-2501
Working
InReview
Rejected
Approved

Fig.13 Attribute index with input validation for code list

Meaning of index cell color is;

Pink: Read only attribute

Light blue: Code list attribute type

Light green: Other attribute

For code list type attribute, data validation will be automatically set for attribute data edit support by adding code list value at the end of worksheet row.

Cell color of name column will be set based on your access right same as (Shift + A) operation in the search result grid.

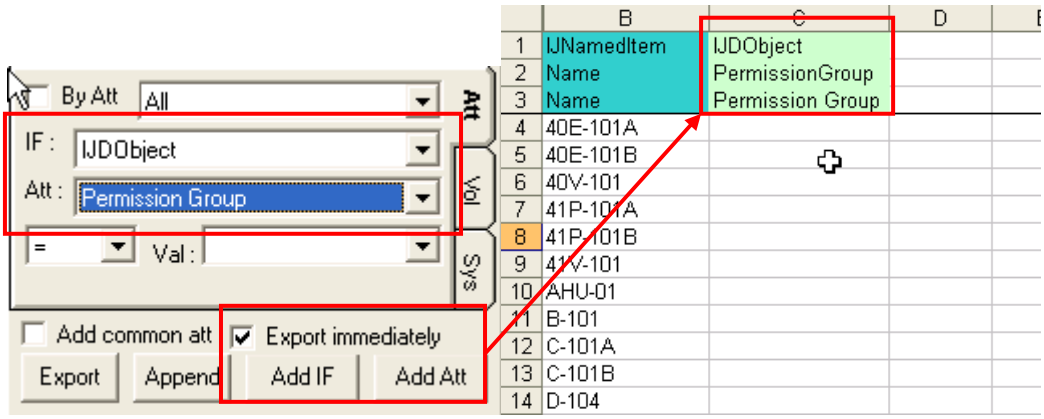
"Append" button will add data to active sheet by comparing oid. This command is useful when user want to update list for additional object to existing Excel list.

Additional data will be displayed with bold font in the name column.

9. Defining index for report

9.1 Direct attribute

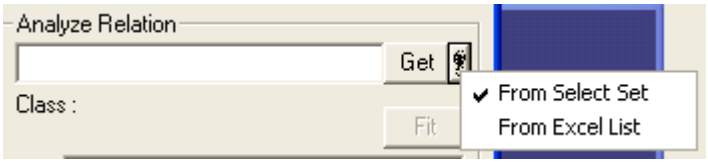
You can create simple report without defining report template or knowledge of database structure or SQL command. Simply select required attribute and click "Add Att" button or select interface and click "Add IF" button. Additional index will be added at active excel sheet. If "Export immediately" is checked, data export will start after clicking the button.



9.2 Relation object's attribute (by Relation Analyzer)

If you can not find required attribute, such attribute is not direct attribute of the object but relation object's one. To define and add index of such relation object's attribute, use relation analyzer in the "Import/Export/Relation" tab.

Select one typical item in the search result grid and click Ctrl+A or select item in the exported Excel list or select one in the workspace / view and click "Get" button in Analyze Relation pane. (Get from Excel or select set is option. Click black triangle to choose.)



Oid of the selected object is copied to text box and object type and name will be displayed and corresponding relation will be displayed in the combo box (Fig.14 left). If you select one of the relation in the combo box, relation object type and number will be displayed as Fig.14 right. Oids of relational object will be copied to clipboard. You can continuously search relation chain by clicking Ctrl+Z at top text box. If multi-oids are copied at clipboard, text box is automatically switched to combo box.

"Fit" button will fit object in the view(s).

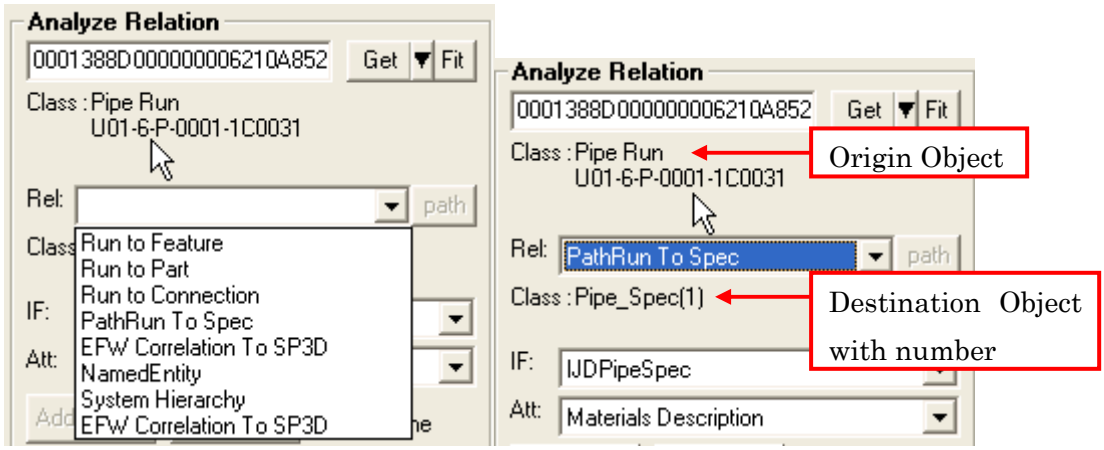
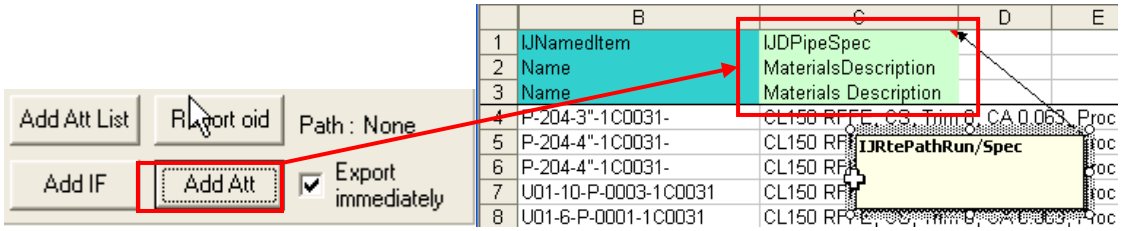
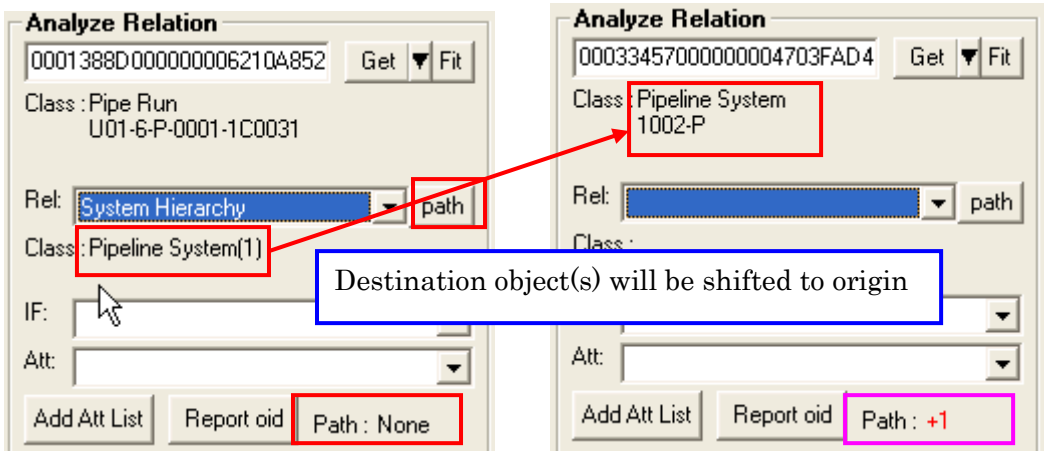


Fig.14 Analyze Relation

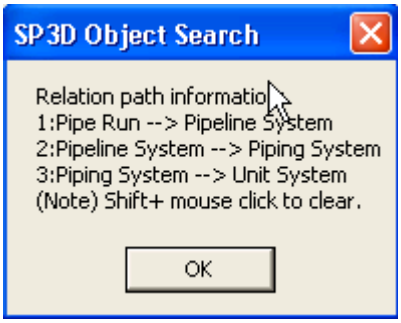
You can add relation object's attribute by selecting interface and attribute and click "Add Att List" or "Add IF" or "Add Att" same as direct attribute. Relation information will be set as note in the 1st row of Excel sheet.



If you want to follow relation chain further beyond one relation, click "path" button after selecting relation in the combo box. Destination object(s) is moved to top text box and you can continue to analyze and follow relation further.

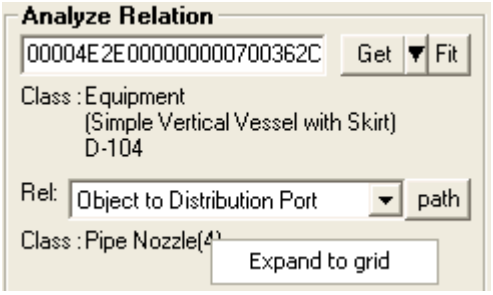


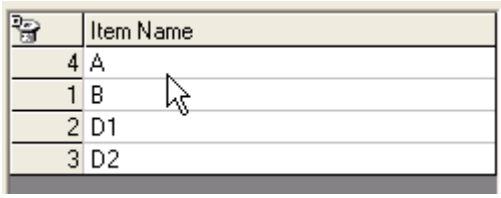
You can check accumulated path information by clicking path number. Shift + click will clear path information.


SP3D Object Search
Relation path informatio
1:Pipe Run --> Pipeline System
2:Pipeline System --> Piping System
3:Piping System --> Unit System
(Note) Shift+ mouse click to clear.
OK

Send destination object to grid

If you need destination objects list as Excel format, (for example: nozzle list for specific equipment) right click destination object label and run "Expand to grid". Then click "Export" to create Excel list.





"Report oid" button will export relation object's oids in the active Excel list. Click with selecting blank one column (or part of one column for testing purpose.) If the number of relation object is not one, only first one oid will be exported with cell color light orange.

If you click V key on the combo box of relation name, detail information of the relation will be displayed as Fig.15 and same information will be copied to clipboard. This information is useful for SQL writer of report / label templates or automation programmer.

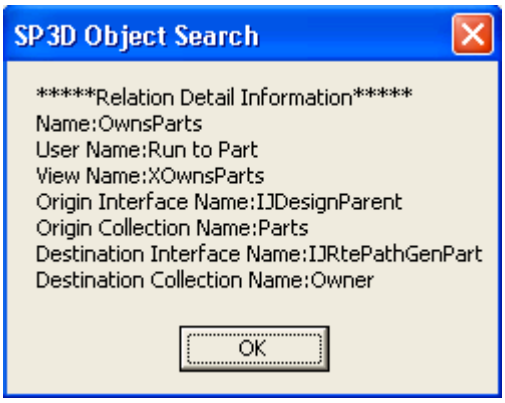


Fig.15 detail information of relation

10. Export/Import/Compare

Several buttons are available in "Import/Export/Relation" pane. You have to activate

Excel list and select target range before clicking these buttons. Following four types of selection is possible.

a) Select whole sheet

b) Select continuous columns

c) Select continuous rows

d) Select continuous range

multi region selection is not supported.

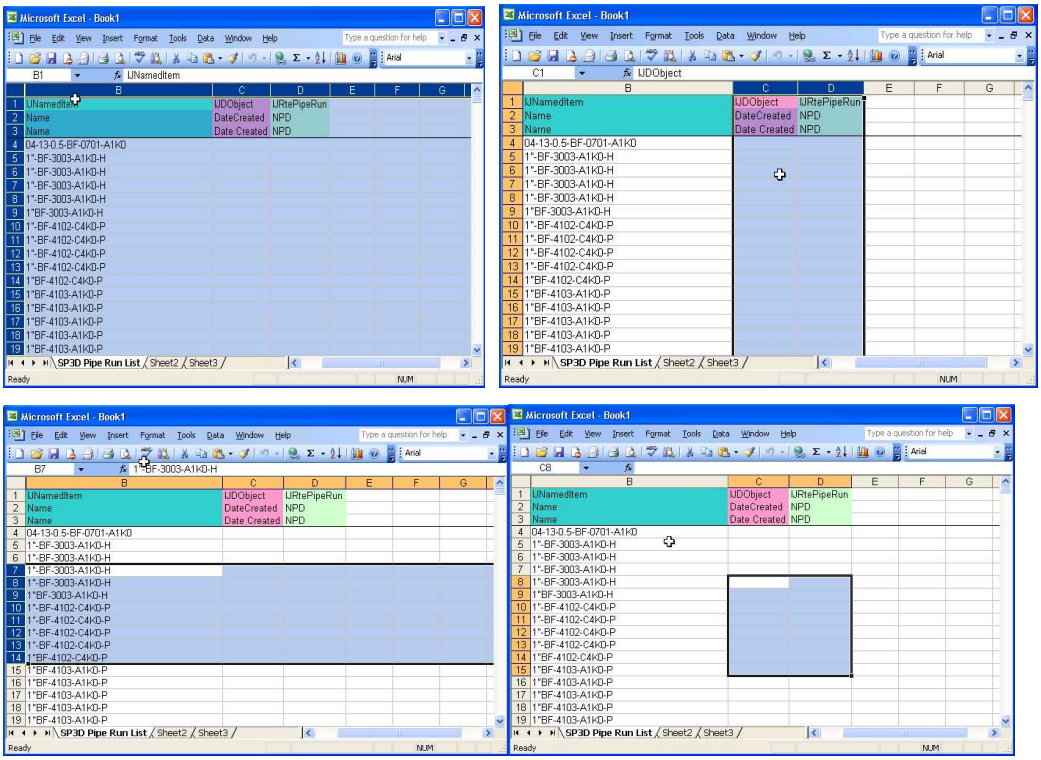


Fig.16 Excel selection type for processing

Attribute processing will be skipped for hidden rows, so you can apply auto-filter for processing objects.

You can cancel while these processing on the way by clicking “Cancel” button displayed while processing. However, try with small selected range first, then apply processing to whole list is highly recommended.

10.1 Export

After defining indexes in section 9.1 and 9.2, you can export database value to Excel sheet by clicking this button.

10.2 Import

You can edit attribute value in the Excel list and write back to SP3D database by clicking this button. If attribute type is number with unit of measure, simple number will be imported as number with default unit. You can specify number with unit like “0

C" (in case of temperature) etc.

10.3 Compare

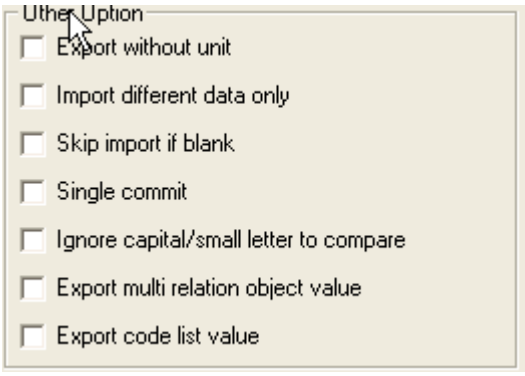
You can compare Excel value and SP3D database value to check if import works OK. If there's difference between Excel value and database value, database value will be set as note of the Excel cell. And cell color will be green.

10.4 Undo

Run undo command within this custom command. Undo is valid for import action.

10.5 Optional Check Box

Several option checkbox is available for export/import/compare.



10.5.1 Export without unit

By default (check off), attribute with unit will be exported with format <Value> <Unit>. Unit used is default unit of current workspace. You can change it from Tools – Option menu. (Units of Measure). If checkbox is on, export format is value only.

10.5.2 Import different data only

If this checkbox is on, program will compare data between Excel value and database value and only in case of different data, import will be performed.

10.5.3 Skip import if blank

If check this option, blank data will be skipped to import.

10.5.4 Single commit

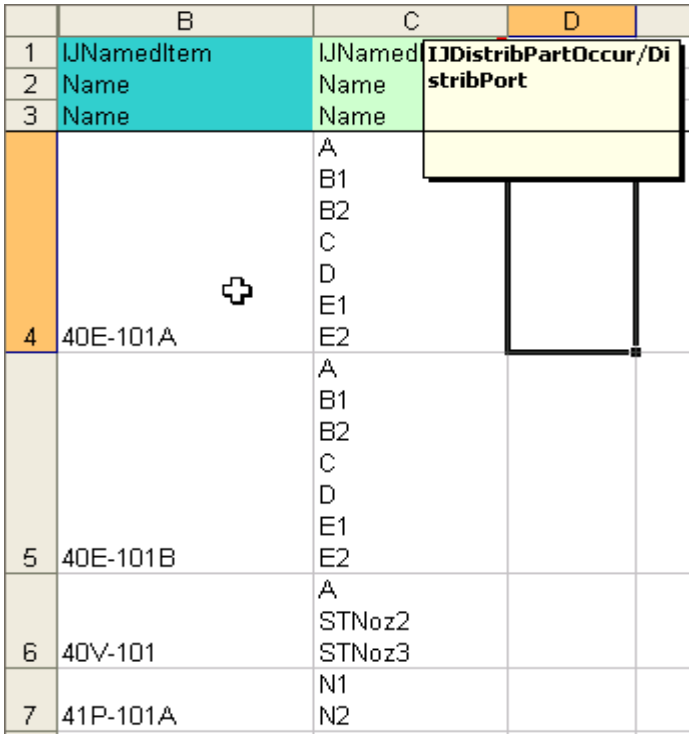
By default (check off), commit to database will be done for every single row. By checking "Single commit", system will do commit only once after all processing completed. The advantage of single commit is that only one undo will return to original state before processing. However last one commit takes long time if you import thousands of rows and sometime it causes memory overflow error. So I don't recommend to check this option for huge records import.

10.5.6 Ignore capital/small letter to compare

If you compare data with list generated from other source. Sometime capital/small difference can be negligible. By check this option, compare works in this way.

10.5.7 Export multi relation object value

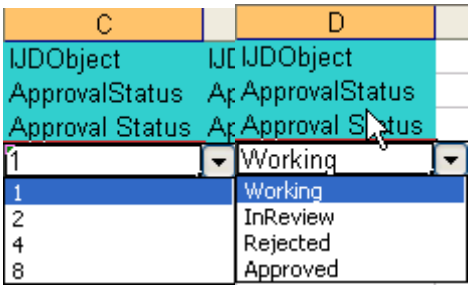
If you define index for relational object by relation analyzer, sometimes relation can be 1 to n objects (for example, equipment to nozzle). By default (check off), export will report value for first one object only and cell color will be orange which means multiple value exists. If check this option, export will report all values in one cell delimited with carriage return. (Lf) Import is not supported for multi value export result.



Sample of multi value export (equipment to nozzle)

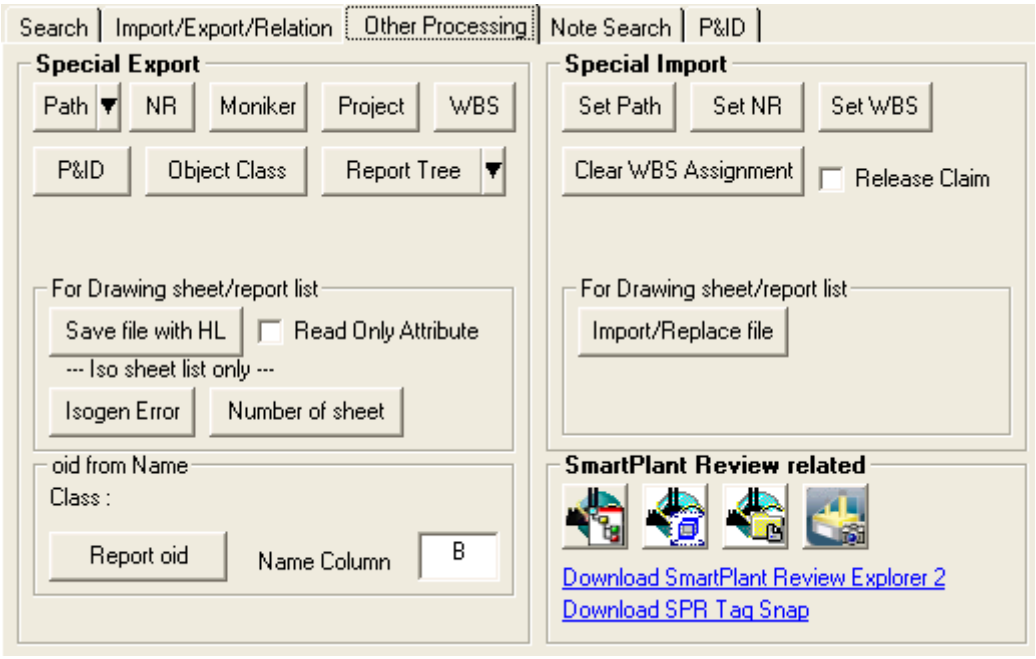
10.5.8 Export code list value

With checking this option, code list value will be exported / imported instead of short string value. Input validation is also set based on code list value.



11. Other Processing Tab

In this tab, several special processing function buttons are available which can not be achieved by simple export / import of attributes.



11.1 Path

This button will export path/parent information of each object in the Excel sheet. In case of model object, path of workspace explorer will be exported. In case of drawing and report sheet, drawing tree path will be exported.

By default, full path information is selected as option. Click black triangle and select option as necessary.

Fig.17 path option

11.2 NR (Naming Rule)

This button will export naming rule information of each object in the Excel sheet. Input validation will be automatically set for each cell to change it. (See 11.1 Set NR)

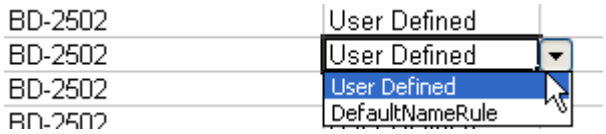


Fig.18 naming rule validation

10.3 Moniker

"Moniker" is unique identifier maintained in SmartPlant Review property data. By exporting this information into Excel sheet, you can find corresponding object in

SmartPlant Review model data. (Use another tool “SPR Moniker Sync.exe” which is also available at davetyner.com)

11.4 Project

This button will export WBS project information of each object in the Excel sheet.

11.5 WBS

This button will export WBS information of each object in the Excel sheet. System will ask you full path of WBS tree (Yes) or upper parent WBS (No).

11.6 P&ID DWG

This button will be active when the plant is connected with SmartPlant Foundation. If you use P&ID correlation function, corresponding P&ID name can be exported. This export is valid only for equipment, pipe run and piping component (includes instrument and special parts.)

11.7 Object Class

This button will export object class name of each object.

11.8 Report Tree

This button will create new Excel workbook which display hierarchy report as shown below. Four type of option is available. Click black triangle to choose option. First hidden column is oid, second column is hierarchy with name and third column is object class name.

You can additionally define attribute and do export/import for this work sheet too.

	B	C
1		
2		
3	System Hierarchy	Class Name
4	SP3DTRAIN	Plant Root
5	├A1	Area System
6	│ └U11	Unit System
7	│ ├Electrical	Electrical System
8	│ │ ├Control	Generic System
9	│ │ │ ├Cables	Electrical System
10	│ │ │ ├Conduit	Conduit System
11	│ │ │ └CT	Electrical System
12	│ │ ├High Voltage	Generic System
13	│ │ │ ├Cables	Electrical System
14	│ │ │ ├Conduit	Conduit System
15	│ │ │ └CT	Electrical System
16	│ │ └Low Voltage	Generic System
17	│ │ ├Cables	Electrical System
18	│ │ ├Conduit	Conduit System
19	│ │ └CT	Electrical System
20	│ ├Equipment	Equipment System
21	│ ├HVAC	Generic System
22	│ │ ├AHU	Equipment System
23	│ │ ├Returns	Generic System
24	│ │ │ ├Devices	Generic System
25	│ │ │ └Ducts	Ducting System

11.9 Save file with HL (HL: hyperlink)

This function will work only for drawing sheet list or report list. Select one column

which is not blank (name column normally) then click this button. You have to save Excel list in any folder to add hyperlink. Drawing/report files are saved under that folder with relative path of drawing snap-in tree. You can create document list with link easily. If you check “Read Only Attribute” and run, saved file has read only attribute to avoid editing by SmartSketch editor.

	B	C	D
1	IJNamedItem	IJDSheetData	
2	Name	UpToDate	
3	Name	Up To Date	
4	1001-P	Up To Date	
5	1002-P	Up To Date	
6	2001-P	Up To Date	
7	2002-P	Up To Date	
8	2003-P	Up To Date	
9	2004-P	Up To Date	
10	2005-P	Up To Date	
11	300-W	Up To Date	
12	301-W	Up To Date	
13	303-W	Up To Date	
14	400-P	Up To Date	
15	401-P	Up To Date	

11.10 Isogen Error

This button is valid only for Isometric sheet list. It’s tedious to check this error to open “View Extraction Data” one by one in the drawings & reports task. You can create error report of Isogen easily.

IJNamedItem	
Name	
Name	
-0000	
-0000	Code:2022 Msg1:No Iso Created: Error Msg2:IDFGEN reported disconnected pipeline [Personal ISOGEN code 2022]
-2109	
A1A0-05	
A1A0-075	
AREA_1-BF-3001	Code:2022 Msg1:No Iso Created: Error Msg2:IDFGEN reported disconnected pipeline [Personal ISOGEN code 2022]
AREA_1-BF-3001	

Fig.19 Isogen error sample

11.11 Number of sheet

This button is valid only for isometric sheet list. This button will save isometric drawing file in temp folder and count number of sheet. So this process takes longer time than

other processing (several second per sheet)

11.12 oid from Name

This command will find/export oid (database unique identifier) by name as key. This command may be useful to compare Excel list created by other tool (SPPID, Tekla etc.) and import data.

To specify class, select one at class tab in the main search tab to avoid name duplication.

11.13 Set Path (disabled when assistant mode)

You can change parent system object (ex. pipe line for pipe run object) by editing full path information in the Excel sheet and click this button. This button never create new system object, you have to create system object manually before clicking this button. If such system path does not exist, the cell color will be dark red which means failed to set parent.

11.14 Set NR (Naming Rule) (disabled when assistant mode)

This button will set naming rule of the each object. Edit on Excel sheet and select range then click button.

11.15 Set WBS (disabled when assistant mode)

This button will set WBS of the each object. Edit on Excel sheet and select range then click button. Excel data can be WBS item name or full path of WBS tree. If you specify WBS item name, name must be unique in all WBS items. System will automatically claim to parent WBS project.

11.16 Clear WBS Assignment (disabled when assistant mode)

This button will cut relation to WBS item. If you set “Release claim” on, release claim to project as well.

11.15 Import/Replace file

This button will write drawing files back to database. Select hyperlink column created by 10.6 then click this button. By combining these save and import button, you can edit drawings off-line. Manual drawing modification work can be done without SmartPlant 3D.

11.14 SmartPlant Review related

Four graphical buttons and two download link available.

System hierarchy export: Select SmartPlant Review file then start to export system tree

information file (.mdbtr2) which is used by SmartPlant Review Explorer2.

Space hierarchy export: Select SmartPlant Review file then start to export space tree information file (.mdbtr2) which is used by SmartPlant Review Explorer2.

WBS hierarchy export: Select SmartPlant Review file then start to export WBS tree information file (.mdbtr2) which is used by SmartPlant Review Explorer2.

Tag snapshot viewer: Call snapshot view form from main search form.

For how to use, see <Additional Command 2> SmartPlant Review Tag Viewer

12. Excel List - 3D view synchronize function

This button will switch to Excel link mode. Activate any Excel list created by this command and click Excel icon at left-bottom of the main form.

Fig.20 Excel link function

Main form will be hidden while this mode.

Select any row(s) will select and fit in the all 3D views.

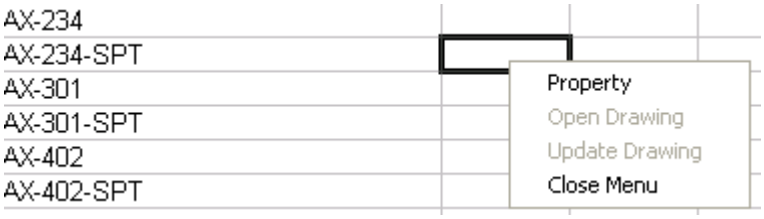


Fig.21 right-click menu while link mode

Right-click and property will open property display.

Open drawing will be active for drawing report sheet object list to open corresponding drawing/report.

Update drawing will also be active for drawing sheet object to update drawing.

Double click on Excel sheet will stop sync mode to normal condition to display main form.

Dark pink Excel button is one time jump to selected object(s) in the Excel list.

13. Isometric Drawing link function

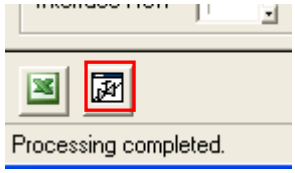


Fig.22 Iso link mode

This button will be enabled when “SP3DIsoLink.dll” is located in same folder as main macro “SP3DOBJSearch.ocx”. Before click this button, you have to open Isometric drawing by SmartSketch editor by right-click Iso sheet in the search result grid or from “Tools”-“Drawing Console”. After click this button SmartSketch macro will be run.

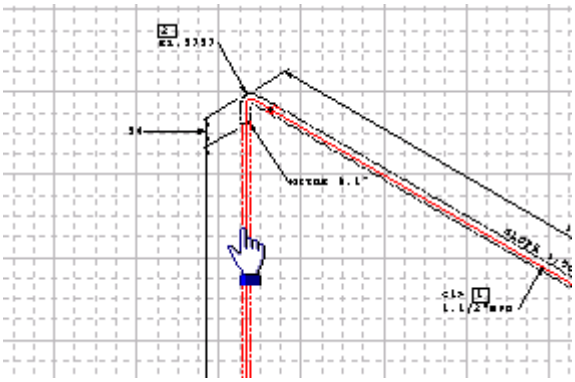


Fig.23 point out cursor type

If mouse cursor is on the piping component object, cursor type will be change as Fig.23 and click will select corresponding 3D object in the active view. Shift+Click will fit object in the 3D view.

Double clicking on the Iso sheet will quit this macro.

14. Drawing / Object list link function

If you open drawing (Iso, Ortho, Composed) by right-clicking search result grid with “Display Obj List” checked. Object list form will be open. This list included objects displayed in the drawing.

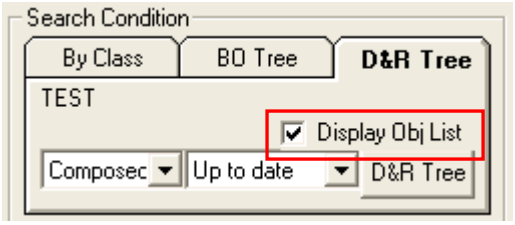


Fig.24 Display Obj List check box

Same as search result grid, single click will select object in the workspace and double click will fit object in the active 3D view.

Right click will highlight object in the 2D drawing and Shift + right-click will fit object in the 2D drawing.

You can filter list by object type (class). View name combo box will be enabled only when drawing consists of multi-view.

Ctrl+C will copy whole list information to clipboard.

When you close DWG Object List, system will ask you to quit SmartSketch editor.

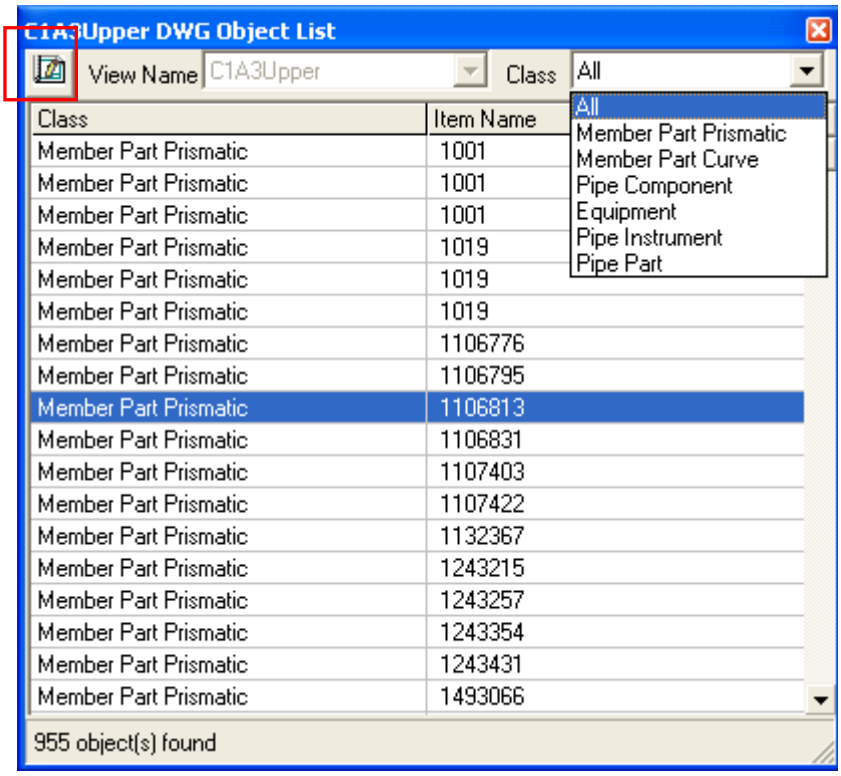


Fig.25 DWG Object list

14.1 Drawing Object Link function

This button will be enabled when "SP3DDwgLink.dll" is located in same folder as main macro "SP3DOBJSearch.ocx".

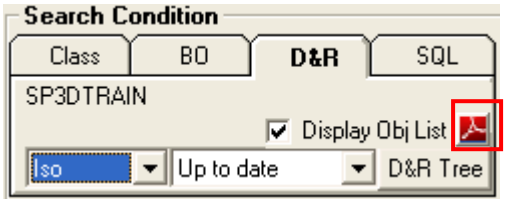
Click top-left Icon with drawing editor open. Same as Iso link cursor type will be changed to point-hand on the 3D object. Click object on 2D drawing will highlight corresponding object in the list and select 3D object. Shift + click will fit in the active 3D view. Double click 2D sheet will quit link macro.

(Caution) In case of ortho or composed drawing, you have to double click view frame and entered to edit mode to select object in the 2D drawing.

15. PDF batch convert function

This function is available to the search result of Iso, Ortho and Composed drawing.

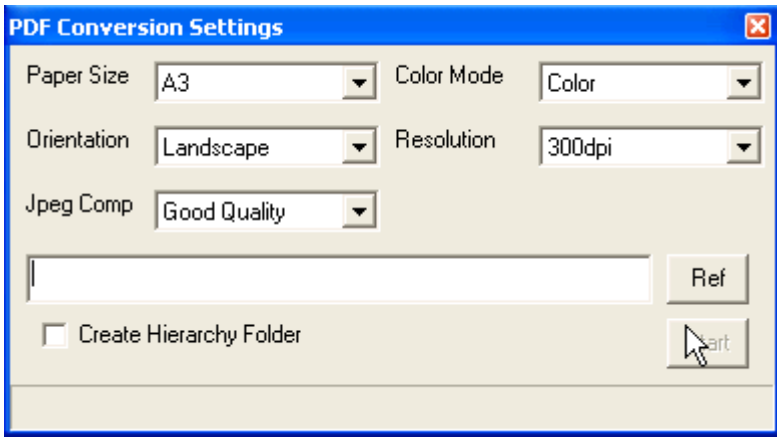
After search result is displayed in the grid, click acrobat button to display PDF settings form.



This function needs SmartPLant PDF converter to be installed. If not, installer will be launched. Click “Install PDF Converter” button and click acrobat button again.

SmartPlant PDF converter installer.

Set paper size, color mode etc. and click "Ref”button to set destination folder. If checking “Create Hierarych Folder” on, drawing console tree folder will be created under selected folder. Then click start button to start batch converting.



16. Interference Entity Viewer

Only when interference data exists, this function works. (button will be disabled without interference data.)

Open “Interference Entity Viewer” form by clicking the button then set search condition on the form and click “Search” button.

Search condition

Part A/B Class: Select from combo box. This combo box entry is same as “Basic” class of main search. You can customize class. (See section 3.1)

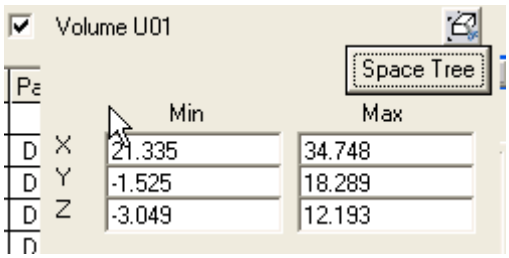
Aspect: Simple physical, insulation etc.

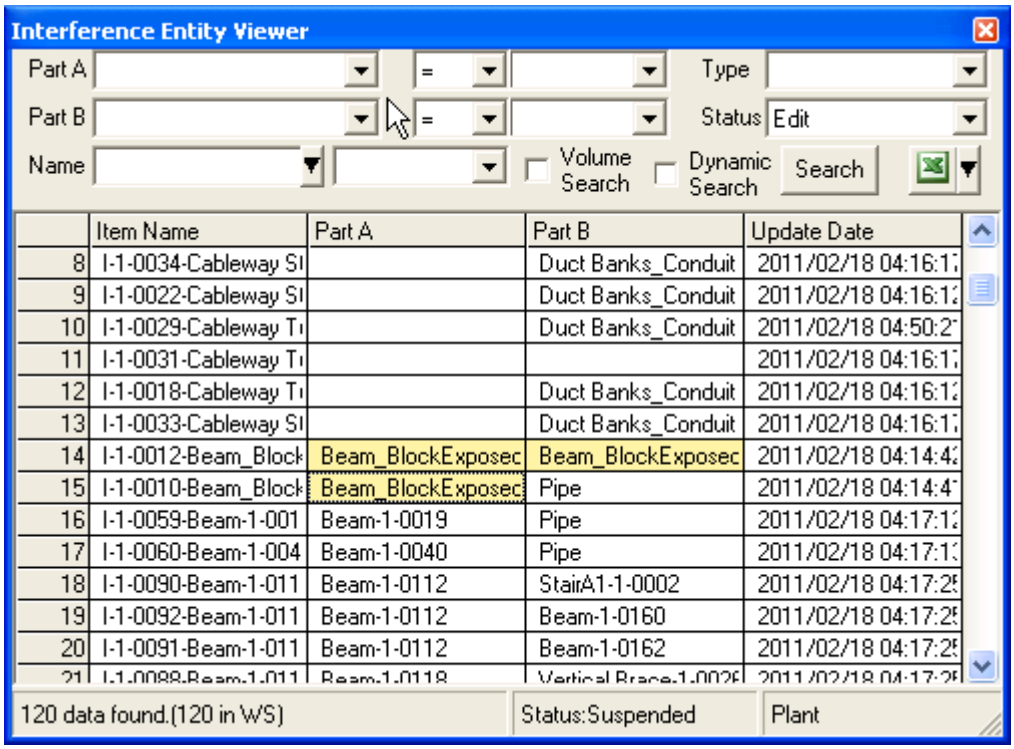
Type: Severe, Optional etc.

Permission group: Part A/B ‘s permission group.

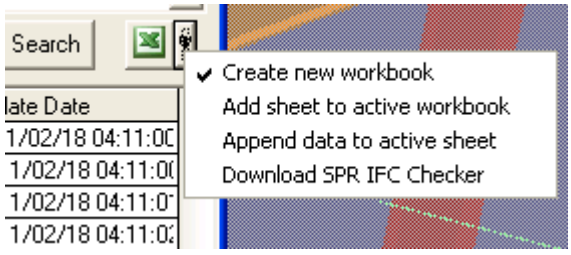
Name: Input part of PartA/B name if necessary.

Volume Search: Check option and select pre-defined volume from space hierarchy.





After search result is displayed, the result can be export to Excel which can be used by SPR IFC Checker (custom tool of SmartPlant Review) Download link is available in Excel report option menu.



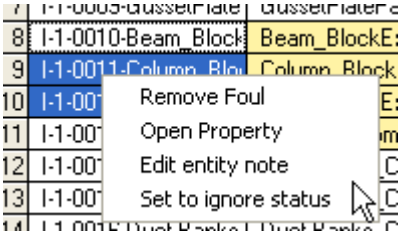
Operation on the search result grid

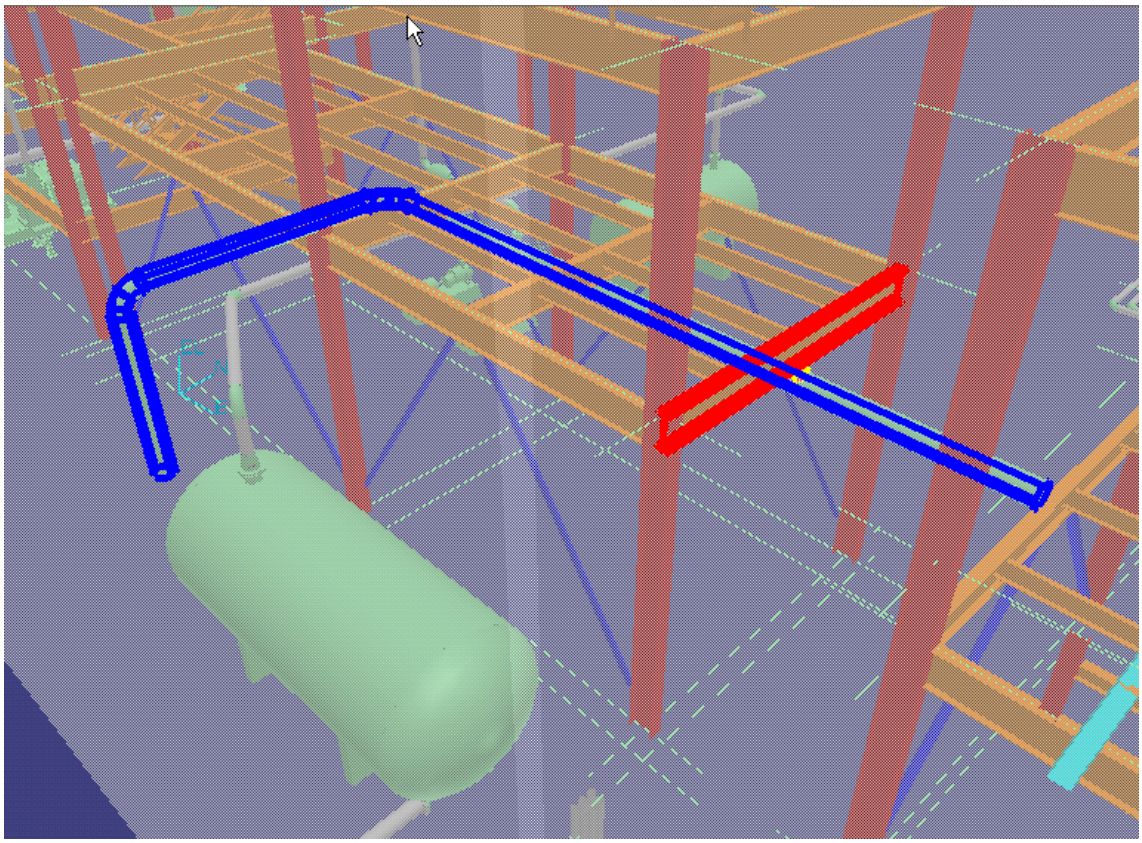
Single click: Select target object (interference entity, Part A and Part B)

Shift + click: Fit to target object (interference entity, Part A and Part B. Select whole

row will fit to all related objects.)
Red hi-liter will be applied for Part A and blue is for Part B.

Right click menu (disabled when the command is called as assistant)
Remove Foul: Physically delete interference entity.
Open property: Open interference entity's property.
Edit entity note: Input box will be displayed to set note.
Set to ignore (or severe) status: Change status





17. Deleted Object Search

Click trash box icon button will display deleted object search form.

Set search condition and click “Check” button to display record count of search condition.

Then click “Report” button to generate excel report.

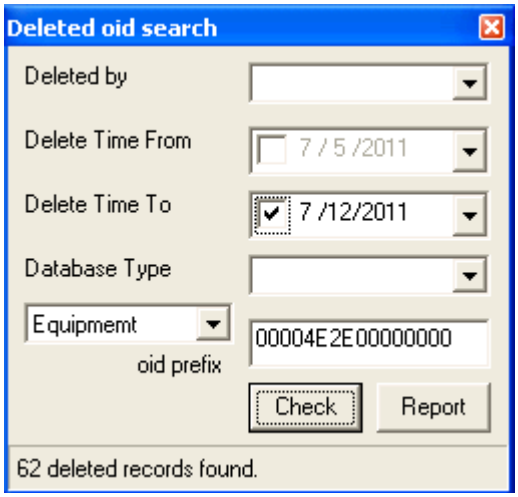
Search Condition

Deleted By: Who delete

Delete time from/to: Duration of delete date

Database type: Select from Model, Catalog and Site

Oid prefix: Each class has specific prefix of oid, you can set oid prefix for class by selecting class in combo box.

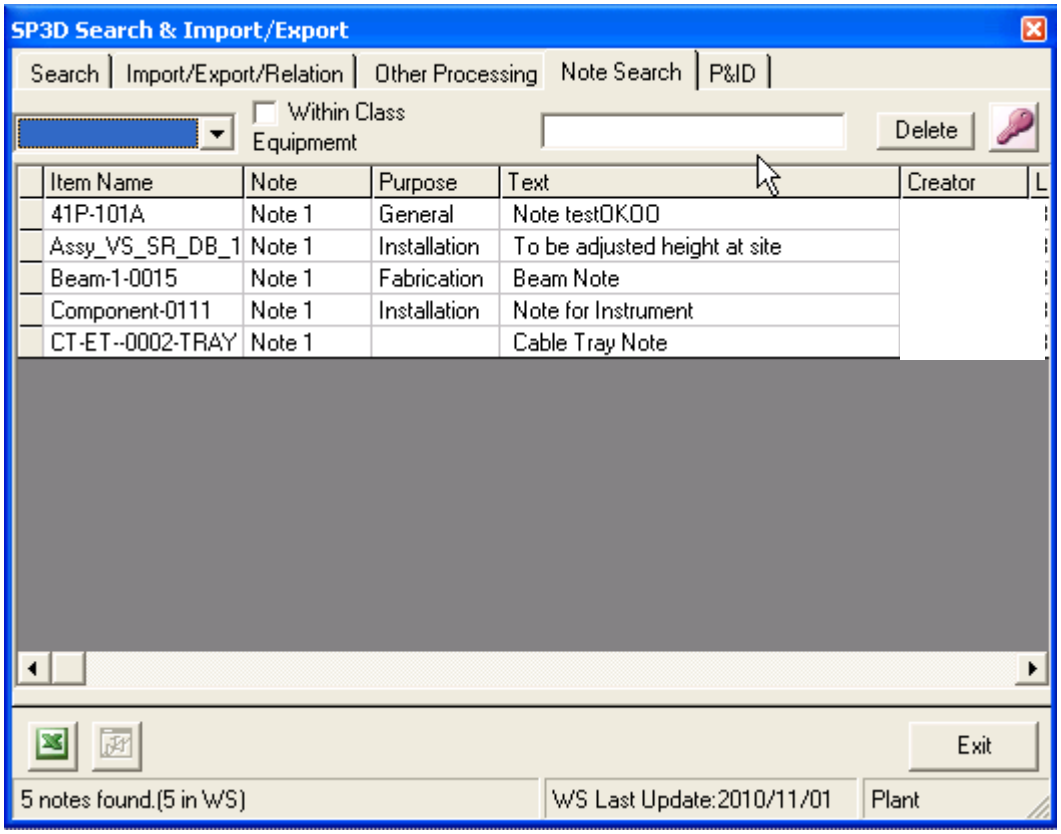


18. Note Search

You can search note object at “Note Search” tab. Search by note text, note purpose, object class which note is added can be specified as search option. Double click any row of search result grid will fit corresponding 3D object which the note was added.

To specify object class, select class at main Search tab- “By Class”. Then check “Within Class” option.

You can delete note from model data base by clicking delete button.



Export to .mdb file

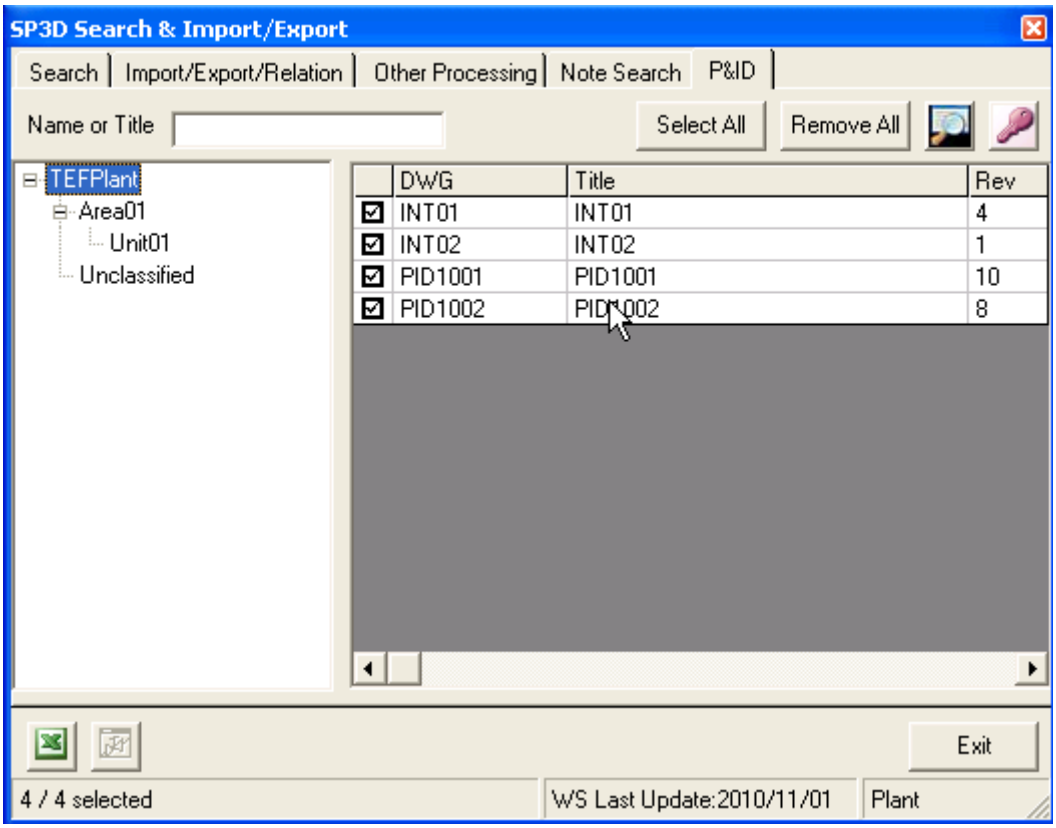
~~Search result can be saved in .mdb format by clicking MS-Access icon on the form. You can refer this .mdb file within SmartPlant Review session using "SPR Note Viewer.exe" which is available at davetyner.com SmartPlant Review forum.~~ This function is deleted because SmartPlant Review supports to display object note from version 2010 hot fix 4.

19. P&ID Search

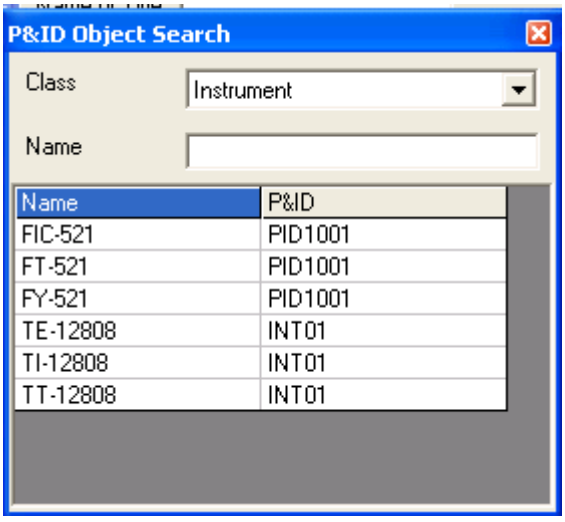
This function/P&ID tab is visible only when the plant is registered with SmartPlant Foundation and P&IDs are retrieved.

Plant breakdown structure (Plant-Are-Unit) tree is displayed on the left side and P&ID list is displayed on the right. You can search by name or title.

Double click any row of grid will open P&ID by SmartPlant 3D's function (to set color of correlation status, it'll take long time to display.) Right click any row will display P&ID by built-in viewer.



Search Icon button next to the MS-Access Icon will open P&ID object search form to search specific object (equipment, instrument, piping special item, pipe run and note) Right click any row in the grid will open the drawing and fit view to the selected object.



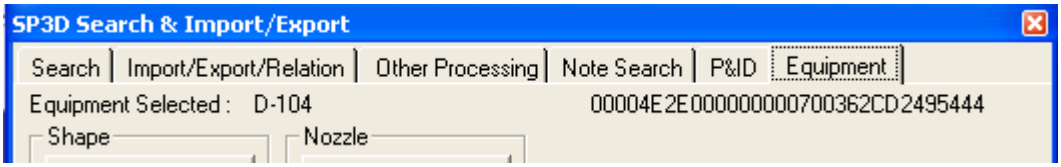
20. Equipment Tab

Equipment tab will be displayed only when you call the custom command from

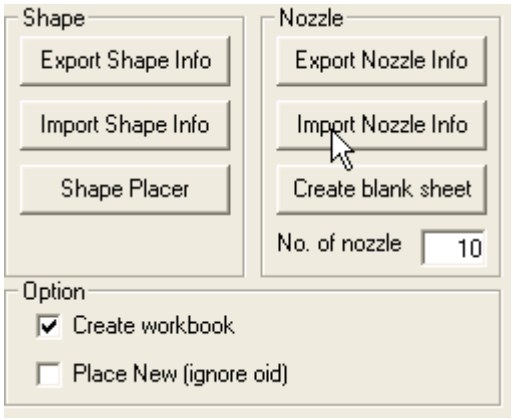
"Equipment and Furnishings" task. Also you need to place "UserShapeDef.mdb" in the same folder to use function in this tab.

Before moving to Equipment tab, you have to select one equipment. (Select in the workspace/view before run this custom command or run custom command first then search equipment and select one in the result gird.)

Selected equipment name and oid will be displayed at the top of the tab.



This equipment tab was developed for custom equipment made from shapes and nozzles. For special equipment which corresponding catalog does not exist for, you have to place primitive shape one by one. As a result, you can express any complicated geometry by spending long time to modeling. To re-use such shape-based equipment as catalog, export/import function is provided.



20.1 Export Shape Info

This button will export shape information to Excel sheet. If "Create workbook" option is checked, new workbook will be created. If not, add sheet to active workbook.

	A	B	C	D	E	F
1	oid	Name	PartName	X	Y	Z
2	00004E27000000001900362CD2495444	DP1	DatumShape 001	0	0	0
3	00004E27000000001B00362CD2495444	DP2	DatumShape 001	0	0	2

G	H	I	J	K	L	M	N
x-vector	y-vector	z-vector	A	B	C	D	E
0/0/1	0.34202014332567/-0.93969262078591/0	0.93969262078591/0.34202014332567/0	0.2286				
0/0/1	0.34202014332567/-0.93969262078591/0	0.93969262078591/0.34202014332567/0	0.2286				

Format of exported Excel shape list is;

Column	Name	Description

A	oid	Oid is unique indentifier of the database.
B	Name	Object name (=IJNamedItem/Name)
C	PartName	Catalog part number (See Shapes.xls in the ¥CatalogData¥BulkLoad¥DataFiles)
D	X	Relative x(plant east) distance from equipment origin
E	Y	Relative y(plant north) distance from equipment origin
F	Z	Relative z(elevation) distance from equipment origin
G	x-vector	x-vector of shape's coordination (x/y/z)
H	x-vector	y-vector of shape's coordination (x/y/z)
I	x-vector	z-vector of shape's coordination (x/y/z)
J	aspect	Aspect code number of each shape
K,L,M….	A,B…..	Dimensional data of each shape

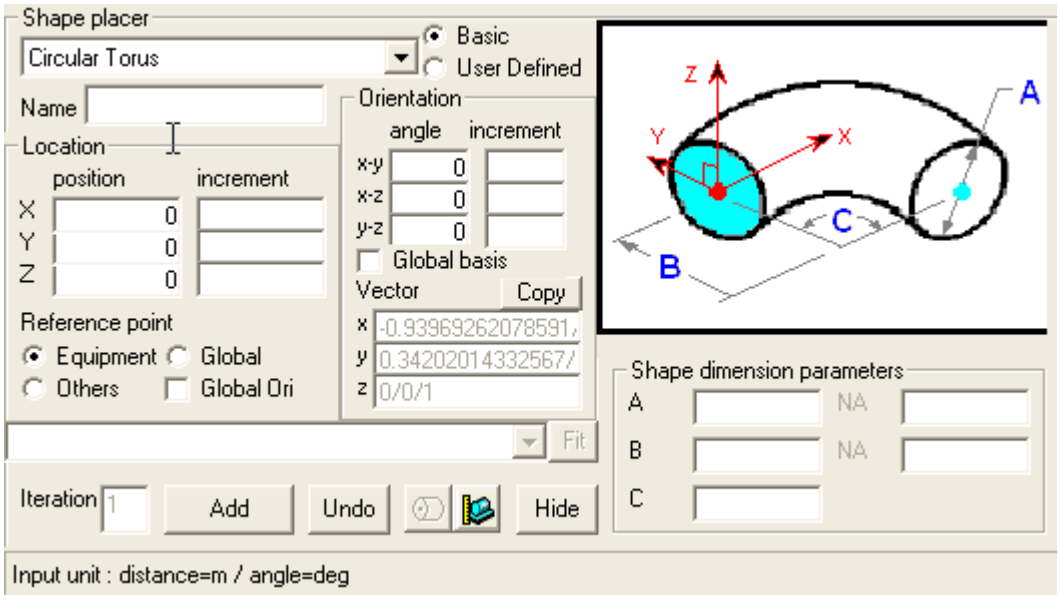
If exported row has grey color which means that corresponding shape is not defined in "UserShapeDef.mdb" (See 17.3 How to define custom shape)

This format must be fixed. Don't add/delete column or change order if you want to import/update data.

20.2 Import Shape Info

If you want to import shape information from Excel sheet, activate sheet and click this button. If you check "Place New" option, all shape will be added as new shape ignoring oid in the A column. Otherwise program will try to find corresponding shape and update data. If corresponding shape does not found, corresponding row color will become gray in the Excel sheet. If name column is blank, default naming rule will be applied.

20.3 Shape Placer



By shape placer, you can add shape by setting location, dimension and orientation in this form.

Shape type

Select shape type in the combo box. If you can not find shape you want to place, you have to additionally define shape information in “UserShapeDef.mdb”

Location

Set location X,Y,Z. X,Y,Z is relative distance from reference object. (by default, equipment origin) You can change reference point to global (plant origin) or others. If you select “Others”, you can select one child object of the equipment in the combo box.
Orientation to calculate location X,Y,Z is based on equipment coordination system. You can change it to global coordination (plant-east: X-axis, plant-north: Y-axis, Elevation: z-axis) by checking “Global Ori” option.

Orientation

Set rotation angle for each plane if you want to rotate shape. Same as location you can change rotation basis to global as option. Calculation result of each axis is displayed in three text boxes. You can copy the axis information to paste Excel shape list to update rotation.

Shape dimension parameters

Picture of shape and number of dimension parameter is changed if you select shape in the combobox. Set proper size / angle in these text boxes.

After setting these information, click "Add” button. “Add” button will be changed to two buttons, “OK” and “NG”. If you confirmed that all information is correct and shape placement is correct, click “OK”. If not, click “NG” and go back to input information.
Clicking shape icon will fit added shape. Clicking design equipment icon will fit equipment in all views. Even if you click “OK”, you can delete the shape by clicking “Undo” button.

By setting increment and iteration number, you can place same shape by certain distance and/or rotation increment by one action.

20.4 How to define custom shape

Open “UserShapeDef.mdb” by MS-Access. This file consists from two simple tables, “CatalogPart” and “AttributeDef”.

id	DisplayName	PartNumber	isUserDefined
1	Datum Shape	DatumShape 001	☐
2	Circular Torus	CircularTori 001	☐
3	Sphere	Sphere 001	☐
4	Eccentric Cone	EccentricCone 001	☐
5	Cone	RtCircularCone 001	☐
6	Triangular Solid	TriangularSolid 001	☐
7	Octagonal Solid	OctogonalSolid 001	☐
8	Hexagonal Solid	HexagonalSolid 001	☐
9	Rectangular Solid	RectangularSolid 001	☐
10	Platform 01	Platform1 001	☐
11	Platform 02	Platform2 001	☐
12	Semi Elliptical Head	SemiEllipticalHead 001	☐
13	Rectangular Torus	RectangularTorus 001	☐
14	Truncated Rectangular Prism	TruncatedRectangularPrism 001	☐
15	Eccentric Transition Element	EccentricTransitionElement 001	☐
16	Transition Element	TransitionElement 001	☐
17	Eccentric Rectangular Prism	EccentricRectangularPrism 001	☐
18	Cylinder	RtCircularCylinder 001	☐
19	User DefinedShape Sample	UserDefinedShape 001	☑
(AutoNumber)			☐

Add shape information in CatalogPart table.

Id: Automatically set by MS-Access.

DisplayName : will be displayed in the combo box of shape placer.

PartNumber : PartName defined in the catalog (and Shapes.xls)

isUserDifined : flag to define user defined or not.

id	PartID	AttributeName	AttOrder
31	11	IJUAPlatform::A	1
32	11	IJUAPlatform::B	2
33	11	IJUAPlatform::C	3
34	11	IJUAPlatform::D	4

Then add attribute information in AttributeDef table.

Id: Automatically set by MS-Access.

PartID: corresponding id in the CatalogPart table.

AttributeName: <Interface name>::<Attribute Name> same as defined in Shapes.xls

AttOrder: Appearance order in the shape placer form and exported shape list from J column.

20.5 Export Nozzle Info

This button will export nozzle information to Excel sheet. If “Create workbook” option is checked, new workbook will be created. If not, add sheet to active workbook.

This format must be fixed. Don’t add/delete column or change order if you want to import/update data.

The format is compatible to normal format of SP3D Object Search report function. You can use “Export”, “Import”, “Compare” function to the Excel sheet.

20.6 Import Nozzle Info

If you want to import nozzle information from Excel sheet, activate sheet and click this button. If you check “Place New” option, all nozzle will be added as new nozzle ignoring oid in the A column. Otherwise program will try to find corresponding nozzle and update data. If corresponding nozzle does not found, corresponding row color will become gray in the Excel sheet. If name column is blank, default naming rule will be applied.

20.7 Create Blank sheet

This button will create blank sheet to define nozzle manually. Then import will place nozzles. You can set number of nozzle rows to be prepared in the blank sheet. Default is 10.

(Additional instruction)
How to integrate 2D drawings into SmartPlant Review 3D Model

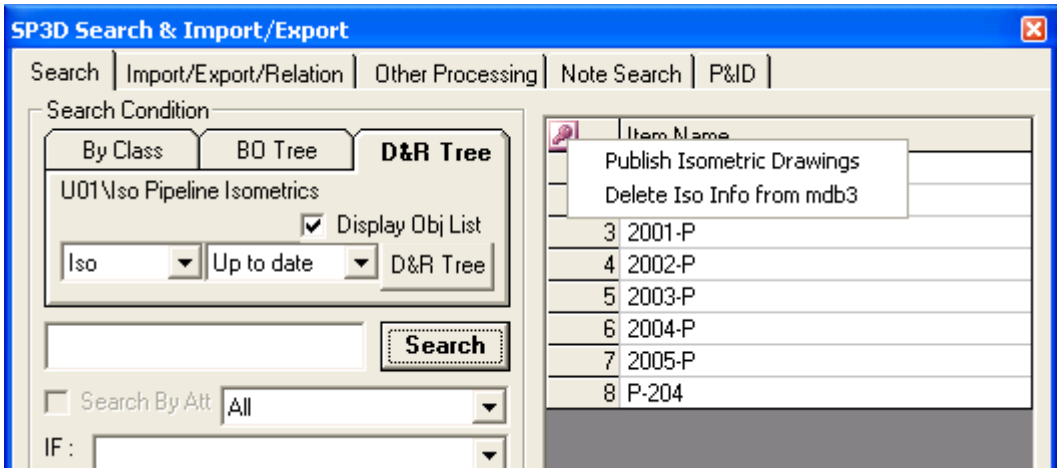
This section describes how to integrate 2D drawings (Isometric drawing and P&ID drawing) into SmartPlant Review 3D model using SmartPlant 3D custom command (SP3DObjectSearch.ocx).

1) Create SmartPlant Review model data files (*.vue and *.xml) at Drawings and Reports task.
2) Open .vue file by SmartPlant Review to generate .mdb file.(or create .svf file if required)
3) Run custom command SP3D Object Search.

4-1) How to integrate Isometric drawings

To integrate Isometric drawings, just generate Isometric drawings at Drawings and Reports task as preparation work.

Move to D&R tab and select drawing snap-in and select drawing status if required, then click search. Search result will be displayed in the grid with MS-Access icon at the top. Right-click the icon and run “Publish Isometric Drawings”.



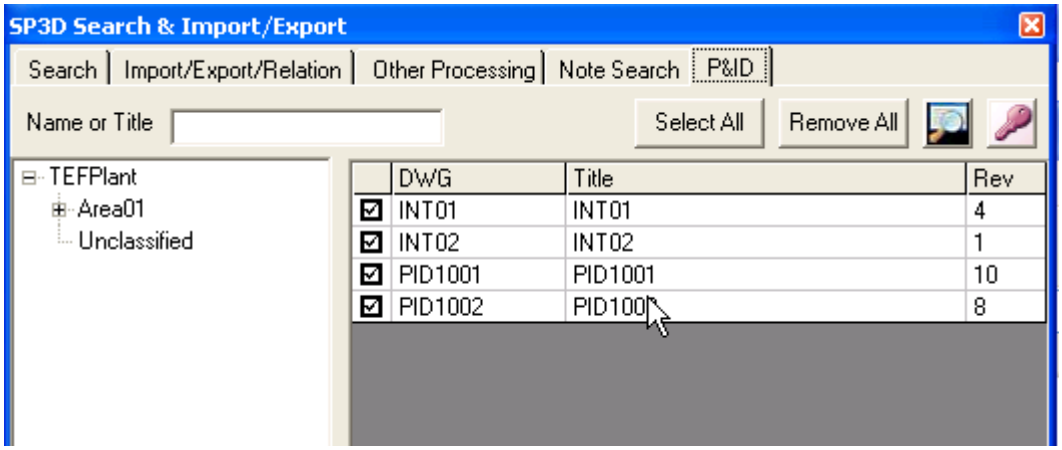
Then select .mdb file created by SmartPlant Review. (Program is just refer its file name and location and create dedicated .mdb3 file.)

4-2) How to integrate P&ID drawings

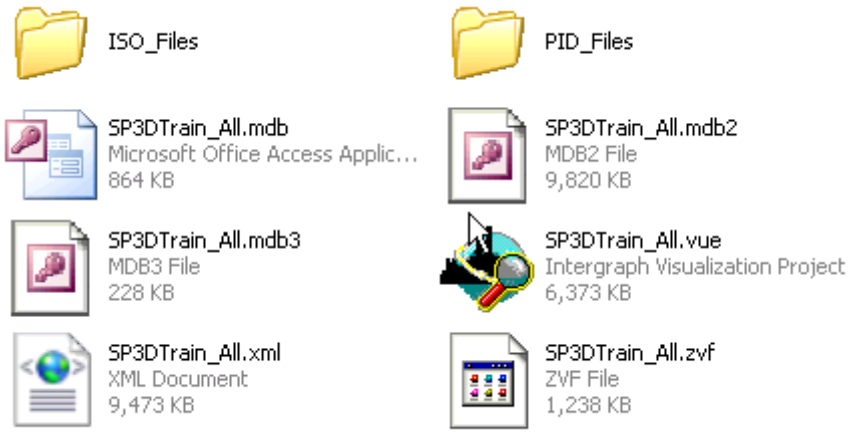
To integrate P&ID drawings, you have to retrieve P&ID drawings from SmartPlant Foundation and correlate 3D objects with P&ID representations.

Move to P&ID tab (this tab will be available only when P&ID was retrieved.) and select / de-select P&ID which you want to publish, then click MS-Access button and select mdb

file which is generated from 3D model data. (Program is just refer its file name and location and create dedicated .mdb3 file.)



After publish is completed, .mdb3 file is generated with file folder PID_Files and ISO_Files. Now integrated environment is ready to use.



After establishing integrated environment, use SPF3D Viewer or SmartPlant Review with SPR_DWG_VIEW.exe. Both are available at davetyner.com SmartPlant Review forum.

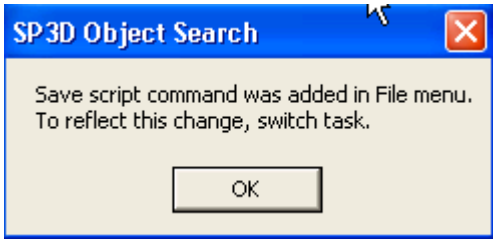
<Additional Command 1> Save script

This command will save script file (.vbs) which will set site information in your registry then open session file.

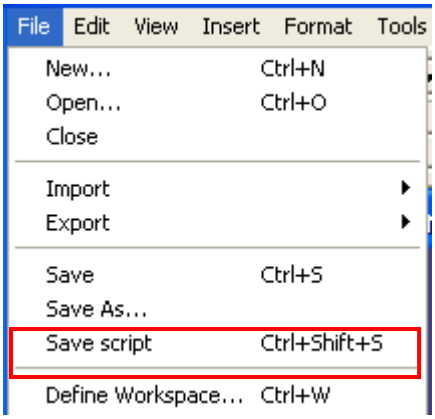
Once you save script file, double click this file instead of SP3D's session file. You don't have to pay attention to switching site.

For easy operation, this command should be called from short cut menu Ctrl+Shift+S.

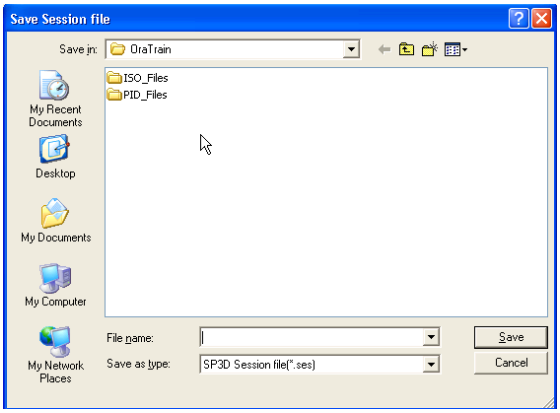
To register this command under "File" menu, run custom command for registration, "SP3DOBJSearch.RegistFileMenu" only once. To reflect additional new menu, switch task. To unregister from menu, run the command again.



New menu command "Save script" will be added in the File menu.



If current session file does not exist, this command will display file save dialog box for session file and save session then generate script file with same name in the same folder.



Here is a sample of script.

```
Option Explicit

Dim objWshShell
Dim REG_SP3DSITE,strKey1,strKey2,strKey3
Dim strVal1,strVal2,strVal3

Set objWshShell = WScript.CreateObject("WScript.Shell")

REG_SP3DSITE = _
"HKEY_CURRENT_USER¥Software¥Intergraph¥Applications¥Environments¥
CommonApp¥ProjectDB¥"
strKey1="PhysicalName"
strKey2="Schema"
strKey3="SiteDatabaseProviderType"

strVal1="SERVER=ZZZZ;DATABASE=XXXX_SDB"
strVal2="SERVER=ZZZZ;DATABASE=XXXX_SDB_SCHEMA"
strVal3="ORACLE"

objWshShell.RegWrite REG_SP3DSITE & strKey1,strVal1,"REG_SZ"
objWshShell.RegWrite REG_SP3DSITE & strKey2,strVal2,"REG_SZ"
objWshShell.RegWrite REG_SP3DSITE & strKey3,strVal3,"REG_SZ"

objWshShell.run "YYYY.ses"
```

<Additional Command 2> SmartPlant Review Tag Viewer

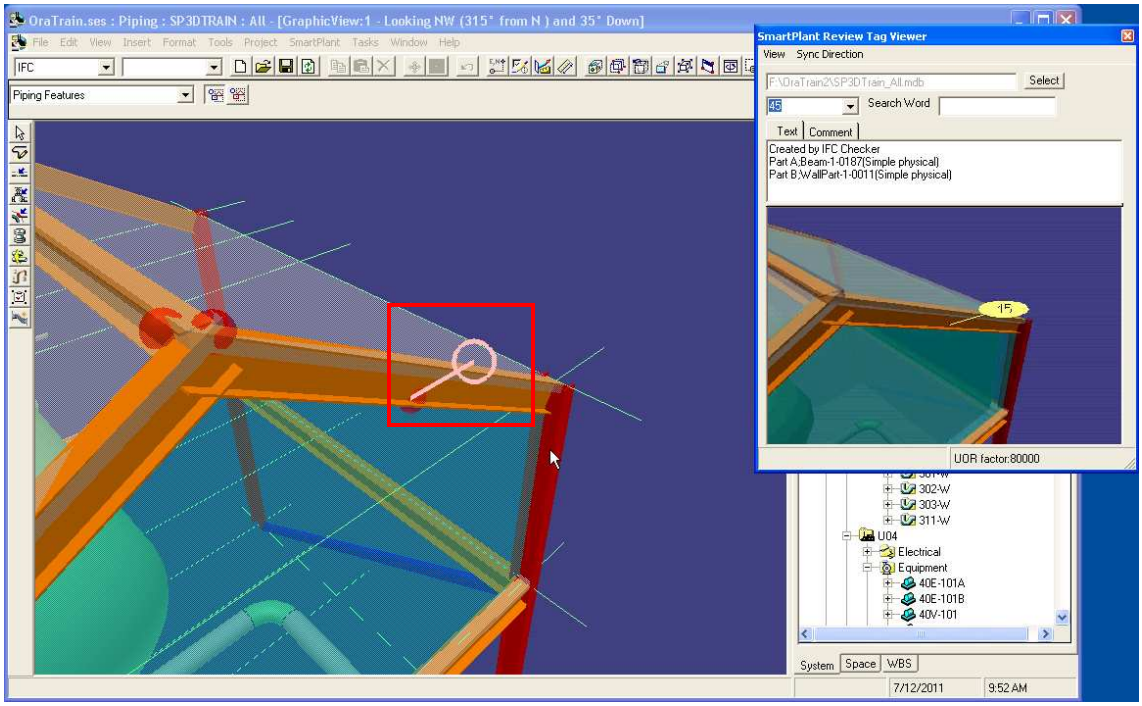
This command can be called as normal custom command by setting command name "SP3DOBJSearch.View_SPR_Tag" or called from main command by clicking graphical button. (See 11.4)

Select mdb file of SmartPlant Review. (This file information is saved in the registry and automatically selected from next time)

Simply selecting or input tag id in the combo box will display snap shot picture and active view of SmartPlant 3D will be synchronized with the view of the tag point.

To display tag balloon, a circle and a line will be added in the active view.

You can visually compare latest 3D model and tag comment with picture.



To display snap shot picture of SmartPlant Review, you have to generate snap shot database file (.mdbsnp) by SPR Tag Snap.

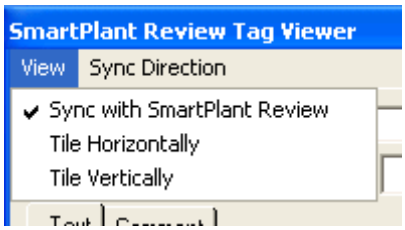
You can edit tag text/comment in the text box.

If you can not jump to correct position in the active view, click right side of status bar and change UOR (unit of resolution) factor, then re-select again.

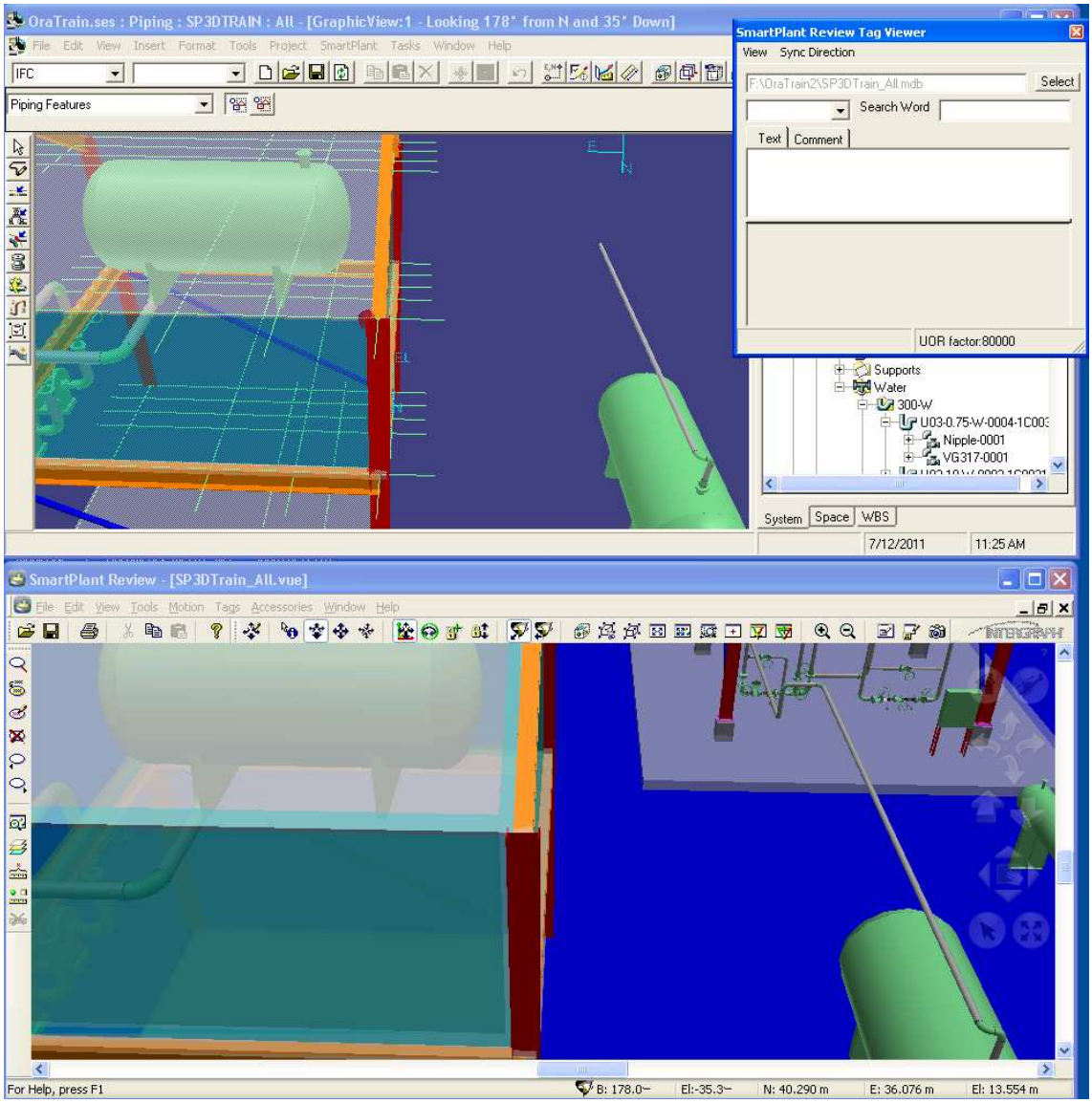
SmartPlant Review view synchronize function

This function requires SmartPlant Review to run as well as SmartPlant 3D. Open same 3D model in SmartPlant Review then check “Sync with SmartPlant Review”. Active view of SmartPlant 3D will be synchronized with SmartPlant Review’s main view.

If you change Sync Direction to “3D to Review”, synchronize direction will be reversed.



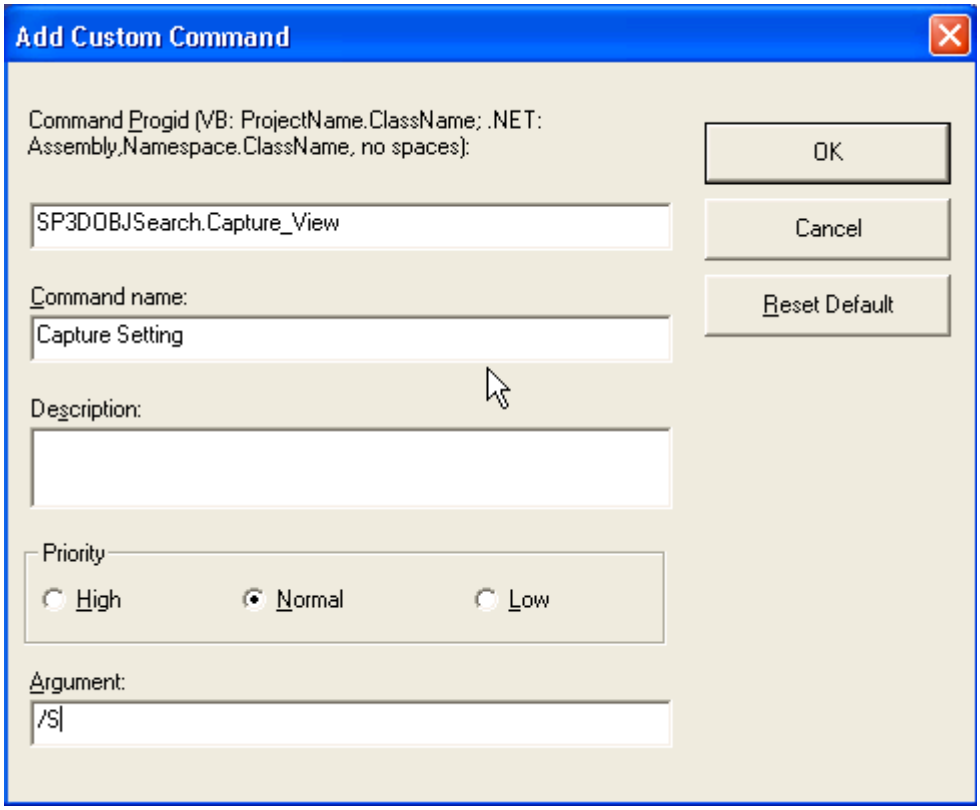
Tile Horizontally, Tile Vertically will be applied to 3D and review main window as if two applications are one application.



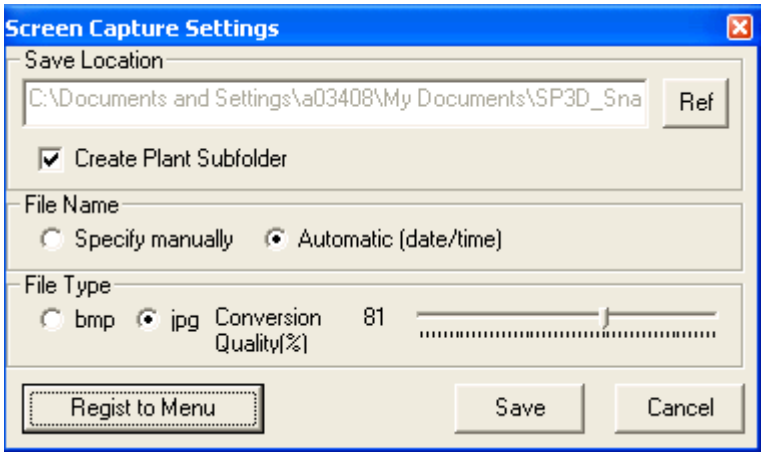
<Additional Command 3> Capture Active View

This function is simply capture active view screen with short-cut key (Shift+P).

To use this command, run command as following settings. (Command ID: SP3DOBJSearch.Capture_View, Argument: /S)



Capture setting form will be displayed.

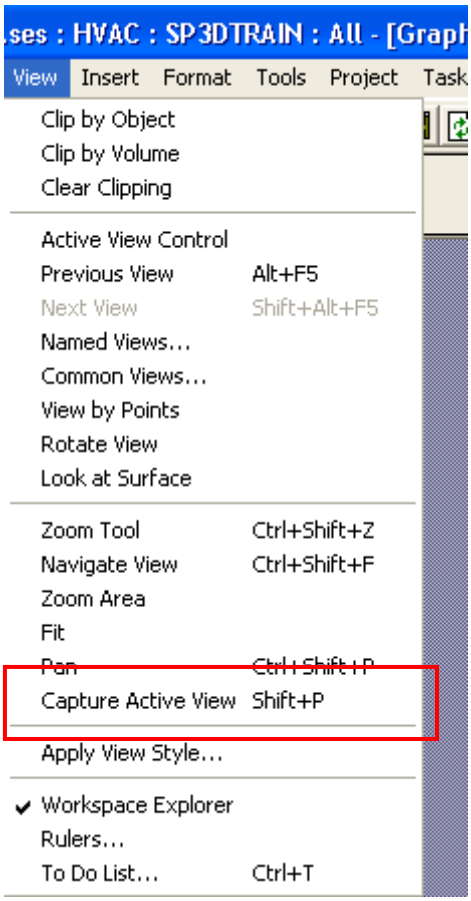


Select save location folder and check “Create Plant Sub folder” if required

Select file name option (manual or automatic), file type (bitmap or jpeg and conversion quality if jpeg is selected).

Click “Regist to Menu”n then save and exit.

After switching task to reflect additional menu command, “Capture Active View” command will be added in View menu.



Simply click Shift+P will save active view in specified folder. If “Specify manually” option is selected, File save dialog will be displayed.